COAL MINING

UNIVERSITY MICROFILMS
313 N 1ST ST
ANN ARBOR, MICH

May, 1957 Volume 34, No. 5

Limas make the big difference!

Whether dragline or shovel, a Lima can make the *big* difference in your daily operations. Its built-in dependability and extra work output mean big savings in time and money on every job.

Find out how a Lima can raise your production curve. Call your Highway representative today!

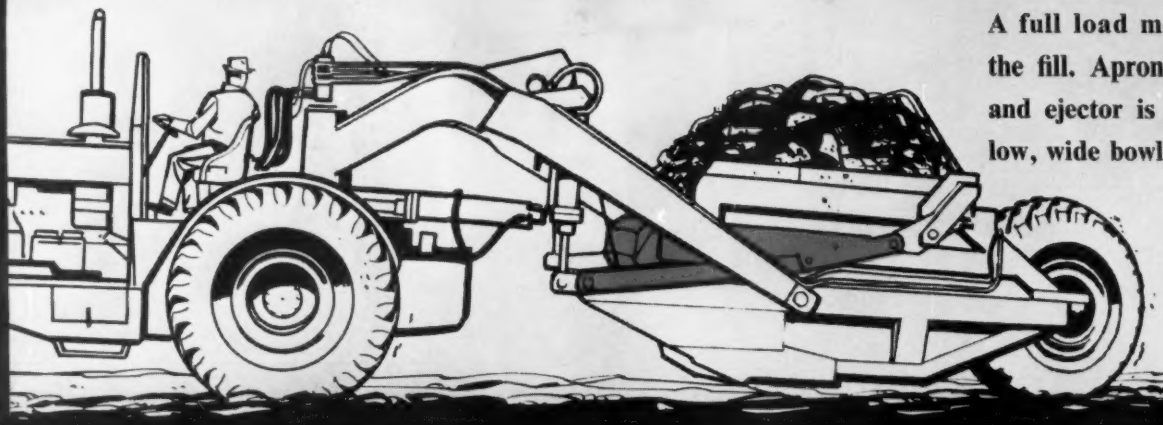
Lima 2400 . . . WIDNOON CO., Kittanning

Lima 2400 . . . BORON COAL CO., Bald Hill, Pa.

Highway EQUIPMENT COMPANY

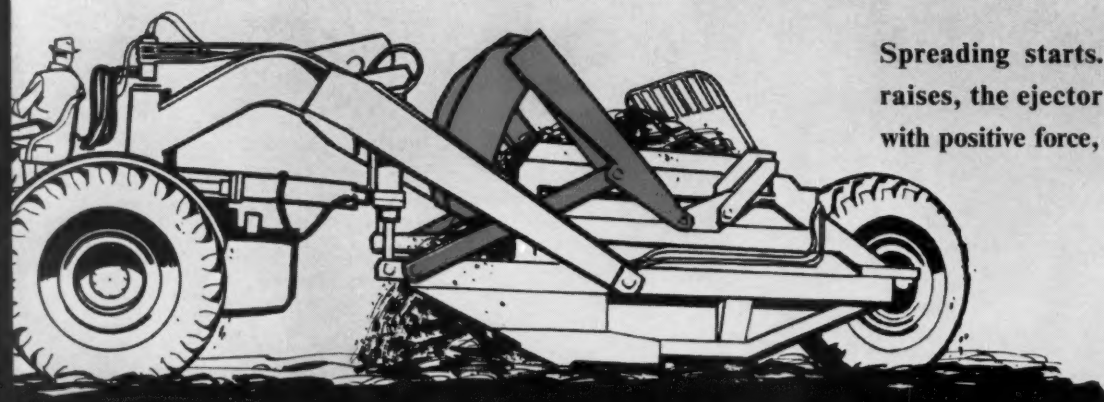
6465 HAMILTON AVE. • PITTSBURGH 6, PA.

Allis-Chalmers • Lima Shovels, Cranes, Draglines • Master
General Motors Diesel Engines • Power-Pack Conveyors
Gar Wood • Lima Roadpackers • Burmeister Mixers and Bins
Michigan Tractor Shovels and Excavator-Cranes
Thor • Jaeger



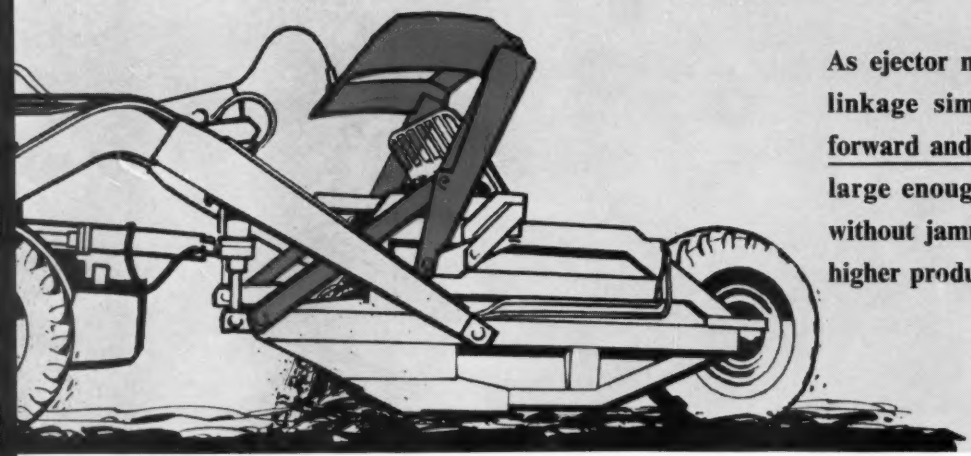
A full load moves on to the fill. Apron is closed, and ejector is at rear of low, wide bowl.

How Allis-Chalmers' patented 3-point scraper linkage



Spreading starts. As the apron raises, the ejector moves forward with positive force, accurate control.

assures fast, clean, controlled spreading of any material



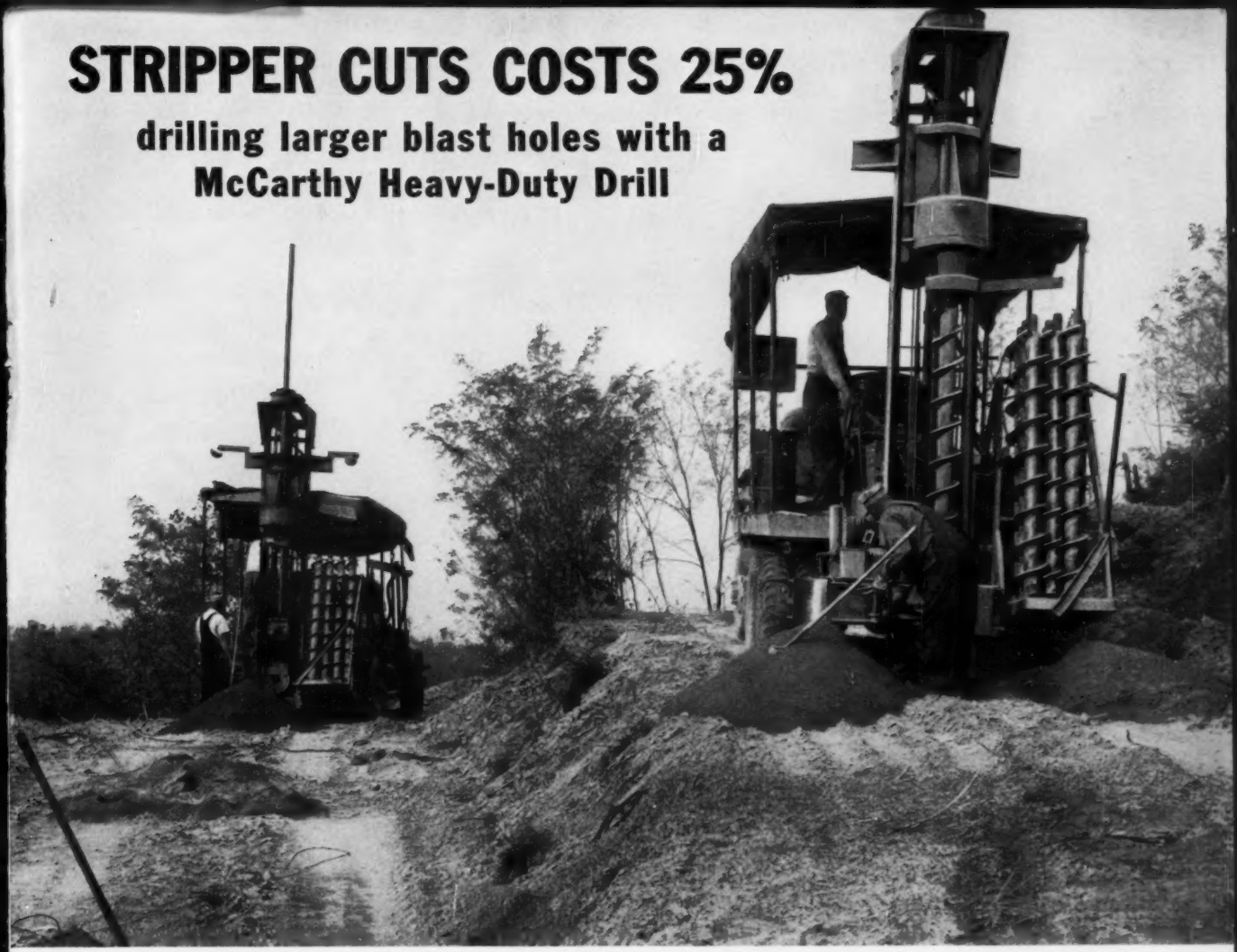
As ejector moves toward cutting edge, linkage simultaneously moves apron forward and upward, providing opening large enough to let any load fall free without jamming. Result: faster cycles, higher production, more profit!

Only your nearby Allis-Chalmers dealer can offer you this important advantage. See it demonstrated now . . . on either motor or pull-type scrapers. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

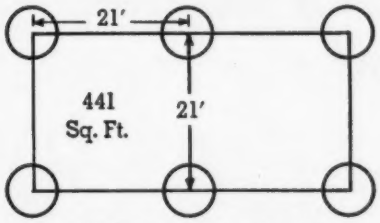
ALLIS-CHALMERS *Engineering in Action*

STRIPPER CUTS COSTS 25%

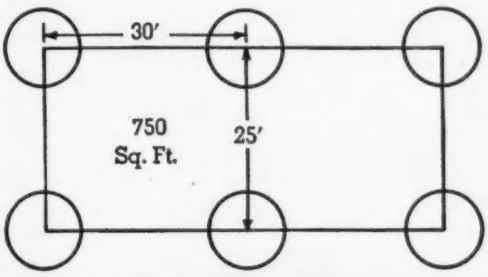
drilling larger blast holes with a McCarthy Heavy-Duty Drill



This strip mine operator cut drilling and blasting costs 25% by using this 25′ x 30′ pattern of 8 in. blast holes—drilled by two McCarthy Heavy-Duty Vertical Auger Drills.



ORIGINAL PATTERN 6 in. holes



NEW PATTERN 8 in. holes

A Southern Ohio strip mine operator cut his drilling and blasting costs by 25% when he widened the blast hole pattern and switched from 6 in. diam. to 8 in. diam. holes. He used McCarthy Heavy-Duty Vertical Auger Drills and a new type of explosive to remove the sandstone overburden.

A cost study made by the operator shows that the McCarthy drill bored the 8 in. holes at less cost than the 6 in. holes. Four 6 in. diam. holes covered 441 sq. ft. Four 8 in. holes covered 750 sq. ft. Since fewer 8 in. holes were required to drill the same area, over-all drilling time was cut in half. In each pattern, the amount of hard rock drilling was the same. The study included five work shifts of two McCarthy Model 106-24 Auger Drills, one using 6 in. and the other using 8 in. flights. The stripper figured all drilling and blasting costs, including fuel, labor, bits, explosives, etc. Over-all cost saving was 25%.

McCarthy Heavy-Duty Vertical Auger Drills drill up to 24 in. diam. holes faster than any other auger drill. Start cutting your costs now by phoning the nearest Salem Tool representative. Or write for Bulletin M-100.

Manufacturer of Drilling Equipment Since 190

SALEM

THE SALEM TOOL CO.

767 S. ELLSWORTH AVE. • SALEM, OHIO, U. S. A.

MISTER you're wasting time!

Don't lose production time repairing worn Cat assemblies, SWAP 'em at Ohio Machinery for low-cost rebuilt parts

PARTS *SWAP* PLAN

- cylinder heads
- brake bands
- bottom roller groups*
- starting engines
- master clutches
- water pumps
- idler recoil springs

*On roller groups only you can trade in your old roller on a new group and receive from $4 to $15 for each old roller.

Time lost repairing worn Cat* assemblies can mean profits lost to you. Ohio Machinery's new Parts SWAP Plan cuts equipment downtime to a minimum and saves you money at the same time! Parts and assemblies rebuilt under the new SWAP Plan are available immediately at any of the five Ohio Machinery Co. offices. That's why you're wasting time, mister, when you repair worn assemblies instead of swapping them.

A list of Caterpillar* parts already covered in the new Parts SWAP Plan is shown at the left. Many more will be added as rebuilt parts become available. All SWAP parts are rebuilt and guaranteed by Ohio Machinery Co.

Besides cutting equipment downtime to a minimum, Ohio Machinery's Parts SWAP Plan helps you to save two more ways: (1) The parts are rebuilt by efficient assembly line methods which mean lower costs to you. (2) You get a good trade-in allowance right away on your old part or assembly.

See or call the Parts Manager at any one of the five Ohio Machinery offices for complete information.

*Both Cat and Caterpillar are Registered Trademarks of Caterpillar Tractor Co.

OHIO MACHINERY CO.

THE BEST IN CONSTRUCTION AND EARTHMOVING EQUIPMENT

6606 SCHAAF ROAD	940 KINNEAR ROAD	2807 REYNOLDS ROAD	4000 LAKE PARK ROAD	U. S. ROUTE 250
CLEVELAND 9, OHIO	COLUMBUS 16, OHIO	TOLEDO 6, OHIO	YOUNGSTOWN, OHIO	CADIZ, OHIO
LAfayette 4-2911	HUdson 8-9703	JOrdan 3701	STerling 2-8161	Cadiz 465

Power hydraulic controls provide fast, positive response . . . make the operator's job so easy that he's not subject to end-of-the-shift letdown. He's actually enthusiastic about pushing the machine to its high limit all shift long. "It sure is easy to operate . . . has all the power it needs," says the operator of this contour-stripping 1½-yard K-370 owned by B. G. & M. Coal Co., Manchester, Ky.

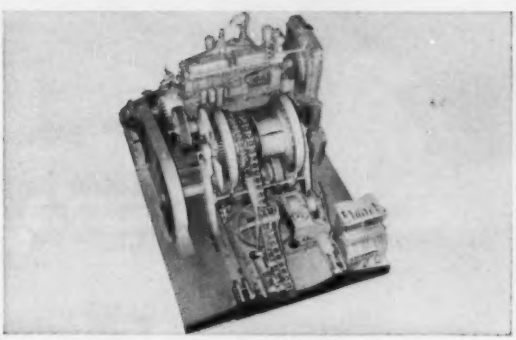
Gaining a BIG power bonus

Link-Belt Speeder shovel-cranes now deliver more usable horsepower than other machines with the same engine

Why? Because a Link-Belt Speeder is engineered for extra-structural strength to take full advantage of the engine's available horsepower and still remain well within engine manufacturers' recommended speeds. For example, Model X when run at 750 rpm develops *125 hp* . . . at 950 rpm it develops *150 hp!*

Thus, with a Link-Belt Speeder on your job you've got more usable power—extra power to sock the dipper into the bank, come up with a full load. And you've more power, to hoist, swing and travel.

And bonus horsepower is but one of many reasons why Link-Belt Speeder owners have been able to completely revise and upgrade their standards of shovel-crane performance. Why not see your Link-Belt Speeder distributor for the complete story or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.



Size and strength of components

In a Link-Belt Speeder you'll find big, extra-strength shafts, clutches, gears and other components . . . units easily able to handle the extra power the machine's engine develops. Result—more production and yet lower cost of maintenance and service . . . less downtime, more work time. 14.327

It's time to compare . . . with

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

WILLISON
automatic
COUPLERS

for safety, speed, strength

If your operation involves haulage with locomotives and cars in the 1 to 30-ton range, it will pay you to investigate the advantages of Willison Automatic Couplers.

Willisons are *Safer*—because they couple automatically...*Faster*—because they're self-aligning...*Stronger*—because they take the full buff and pull forces without depending on intermediate parts.

Over 100,000 Willison Automatic Couplers are in daily use in mines, industrial plants and foreign railroad service because they're *safer...faster...stronger.* AA-3606

NATIONAL MALLEABLE and STEEL CASTINGS COMPANY

Established 1868 — Cleveland 6, Ohio

Canadian Subsidiary
NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY OF CANADA, LTD.
128 Simcoe St., Toronto 1, Ontario

WILLISON AUTOMATIC COUPLERS • RUBBER CUSHIONED UNITS
MINE AND INDUSTRIAL CAR TRUCKS • NACO STEEL WHEELS
NACO STEEL LINKS AND SWIVEL HITCHINGS

COAL MINING

VOL. XXXIV MAY, 1957 No. 5

Contents

Do You Know ---- 9

Here and There in the Coal Industry ---- 9

Coal Industry Sorely in Need of Men ---- 11

Recovering Coal in Mountain Tops ---- 12

Are You a Good Collaborationist? ---- 14

Our Water Pollution Problem ---- 16

Decker Construction Company Moves Most of Its Overburden with Tractors ---- 24

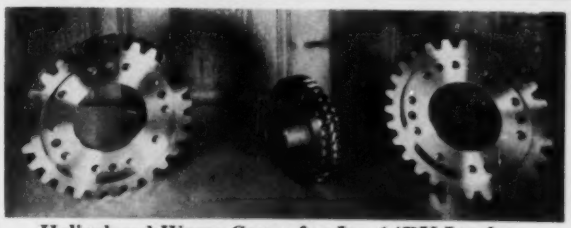
New Mining Era Demands Greater Knowledge of Machines and Their Parts ---- 25

Set Up a System for Suggestions ---- 26

Modifications Solve Problem of Bit Wear ---- 28

Four Brother Operation at the B & B Coal Co. ---- 29

Great Future Lies Before the Coal Industry ---- 30



Helical and Worm Gears for Joy 14BU Loaders
BRONZE, HELICAL and WORM GEARS
unconditionally guaranteed
Licking View Tool & Machine Co.
CAMDEN ROAD ZANESVILLE, OHIO
Distributed by
OHIO VALLEY MINE SUPPLY CO.
Huntington, W. Va.

Laubenstein
Perforated Screen and Plate
MINING — INDUSTRY
for
Centrifugal Dryer Plates
Step Screens
Conveyor Buckets - Flights
HAROLD C. LUSK CO.
3045 W. Liberty Ave. Pittsburgh 16, Pa. LOcust 1-4191
5210 Kentucky St. So. Charleston 6, W. Va. POpular 8-6258

Published by

Modern Mining Publishing Company

4575 Country Club Drive

Pittsburgh, Pa. Phone TU. 1-9411

P. F. JASIK, Publisher and Editor

Philadelphia Representative

PAUL S. KEISER

1729 Ridgeway Road Havertown, Pa.

☆

Printed by

ADVANCE PRINTING & LITHO CO.

1118 Chestnut St.

Erie, Pa. Phone 2-2780

BEHIND *the changing Pittsburgh Scene*

Conte Equipment CORPORATION

SALES CEC SERVICE

M-R-S— Tractors
GRADALL— Multi-Purpose Earth Movers
TERRATRACS— Tractors & High-Lifts
WOOLDRIDGE— Terra Cobra Scrappers, Dozers, Rippers, Power Units
AGRICAT— Powerful Tractors
FERGUSON— Industrial Tractors M-H-F
DAVEY— Air Compressors Light & Stationary
MILLER— Tilt-Top Trailers
BARNES— Water Pumps all Types & Sizes
CH&E— Rollers
MULLER— Concrete & Plaster Mixers
THOR— Air and Electric Tools
BACKLIN— Concrete Cutters
DAVIS— Loaders & Backhoes

BRandywine 1-4380 Wm. Penn Highway Route 22 Monroeville, Pa.

SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS
Made To Withstand High Drilling Speed Whip And Torsional Strain Of Electric Drills

Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers
THE SALEM TOOL COMPANY SALEM, OHIO, U.S.A.

Published monthly by Modern Mining Publishing Company. Publication Office—Advance Printing & Litho Co., Erie, Pa. Editorial and Executive Offices, Erie, Pa. Pittsburgh Office: P. F. JASIK, Publisher, 4575 Country Club Drive, Pittsburgh 36, Pa. Price: In the United States, $3.00 year; all other countries $5.00. Single copy 25 cents. Entered as second class matter at the Post Office at Erie, Penna., under the act of March 3, 1879.

ALLIS-CHALMERS TRACTORS

HD-21 . . . PENN STATE COAL CO.
Du Bois

HD-11G . . .
HARRISON CONSTRUCTION CO.
Pittsburgh

HD-21 . . . COAL RIVER MINING CO.
Hookersville

HD-21 . . . KRISTIANSON & JOHNSON COAL CO.
Lanse

HD-16 . . .
JOHN H. BROOKS & SONS
Monaca

HD-21 . . .
CLARK & KRCHMAR COAL CO.
Portersville

HD-21 . . . NEW SHAWMUT COAL CO.
Hollywood

HD-6B . . . JOSEPH DAVID & SON
West Middlesex

Highway EQUIPMENT COMPANY

6465 Hamilton Ave. • Pittsburgh 6, Pa.

Allis-Chalmers • Lima Shovels, Cranes, Draglines • Master
General Motors Diesel Engines • Power-Pack Conveyors
Gar Wood • Lima Roadpackers • Burmeister Mixers and Bins
Michigan Tractor Shovels and Excavator-Cranes
Thor • Jaeger

...preferred by leading contractors, mines, industrial plants

HD-16 . . . CLARENCE J. SEMPLE
La Jose

HD-21 . . . SIEGEL COAL CO.
Clarion

HD-21 . . . ROBERT BAILEY
Philipsburg

HD-11G . . . W. J. HASLEY
Pittsburgh

2 HD-21's pushload TS-360 scraper . . .
HARRISON CONSTRUCTION CO.
Saxonburg

HD-6G . . . BALDWIN BROS.
Erie

HD-21 . . .
HITCHMAN COAL & COKE CO.
Zelienople

3 HD-16's and 2 Model 315 scrapers . . .
JOHN H. BROOKS & SONS
Monaca

HD-21 . . . PELLIS COAL CO.
Gypsy

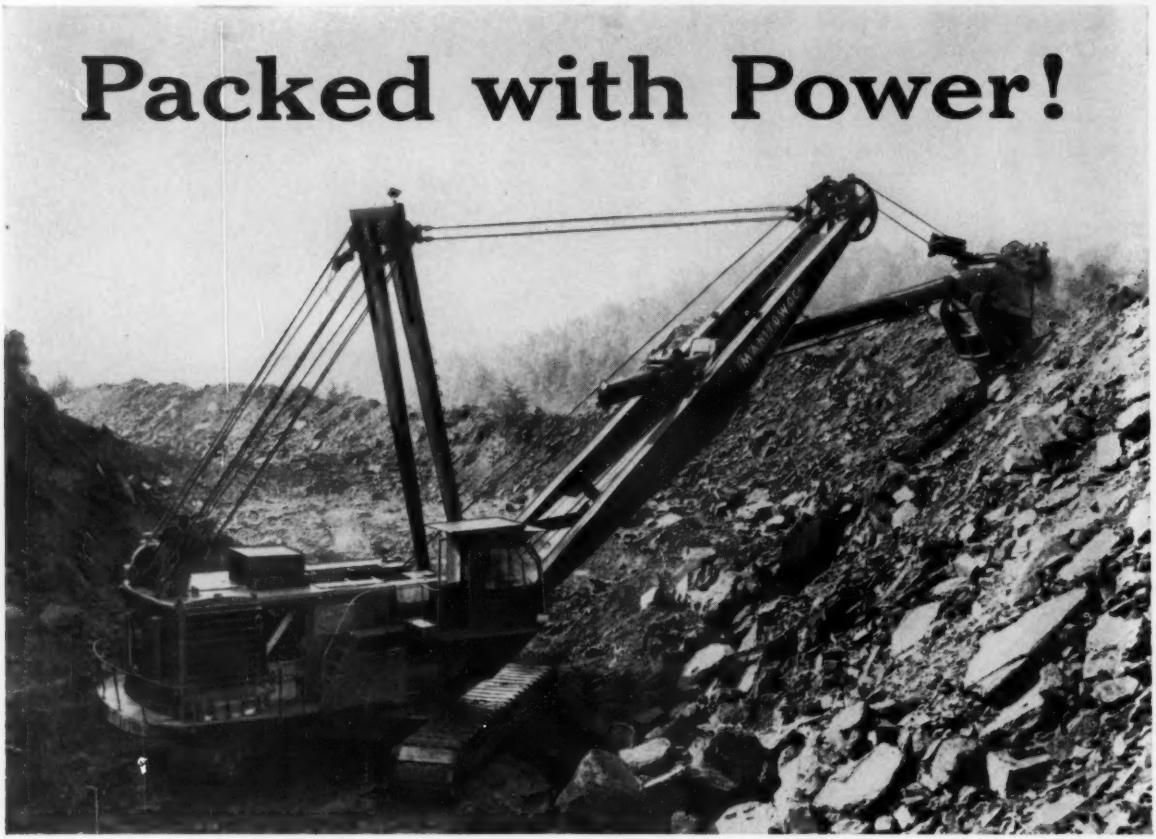
Highway EQUIPMENT COMPANY

6465 Hamilton Ave. • Pittsburgh 6, Pa.

AA-4873

Allis-Chalmers • Lima Shovels, Cranes, Draglines • Master
General Motors Diesel Engines • Power-Pack Conveyors
Gar Wood • Lima Roadpackers • Burmeister Mixers and Bins
Michigan Tractor Shovels and Excavator-Cranes
Thor • Jaeger

Packed with Power!



Manitowoc 4500 Boosts Mining Output

Smart mine operators with an eye on output figures have found that the Manitowoc 4500 loads out more tonnage faster — at greater profit. Here's a true mining machine — always ready to increase output — either as a 5½-yd., big capacity shovel, or a long reach, 6-yd. dragline.

FIRST WITH UNIT DRIVE. The Manitowoc 4500 is powered by a single diesel engine instead of independent electric motors and accessories. You get greater operating efficiency — less power loss with unit drive, pioneered and developed by Manitowoc for large crawler excavators.

UNMATCHED SIMPLICITY. You're rid of all the headaches and special maintenance problems brought on by electric drive. Several electric motors, generators, control boards and thousands of electric wires and connections are eliminated. Your regular mechanics easily handle routine maintenance and servicing.

"SMALL MACHINE" MOBILITY. Working range on the job is extended because there's no restrictive trailing cable — no need to stay close to power installations. When moving between jobs, the unit can be shipped on railway cars or highway trailers — then set up, ready to go, in less than a week.

Discover why more and more mines are switching to Manitowoc — Contact your distributor now!

Manitowoc Engineering Corp., Manitowoc, Wis.

- **Simple Design Throughout for Full Power — Less Deadweight — Less Downtime**
- **High Lift Booms Extend Reach and Height**
- **Tubular Dipper Stick Evenly Distributes Digging Strain**
- **Only 15 Gears and Sprockets — Only Working Gears Turn**
- **Amazingly Low Ground Pressure With Extra Long, Wide Crawlers**
- **Torque Converter Drive — Air Controls — Eliminate Operator Fatigue**

BASSLER EQUIPMENT CO.
FORTY FORT, PA.

ANDERSON EQUIPMENT CO.
BRIDGEVILLE, PA.

Do You Know?

• Automation is a great step forward toward an economic society in which the system is subject to the will of men and not subject to the wild vagaries of unbridled economics, Prof, Donald P. Eckman of Case Institute of Technology declared at the Eighth Annual Research Day program at Case Institute today.

"To a control engineer, automation is the application of feedback devices for manipulating energy or information," Dr. Eckman said. "To an industrial engineer, automation is the use of automatic machines and materials handling equipment. To the industrial executive, automation is what he lacks in not keeping production up and costs down."

The greatest advances in mechanization today are being made in the office, he said. The use of automatic accounting devices will bring "a revolution in office precedures and free the women's world from the tedium of long columns of numbers."

"Payrolls, inventories, sales, materials receiving are but a few of the items that can be handled by complete machine accounting via the punch tape or card," Dr. Eckman said. "Fewer mistakes will be made, work will be done faster, and the machine is neither whistled at nor coffee'd at 10 and 3."

In addition to office applications, Dr. Eckman said automation is eliminating the tedious routine work of engineering, so the scientist may be left free to consider the philosophy of problems rather than being bogged down with detail.

The effects of noise are becoming a serious problem to industry, workers and physicians, Dr. C. Stewart Nash, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., told a regional meeting of the International College of Surgeons.

The problem is who is responsible for hearing losses that occur among workers.

Occasionally a worker becomes fatigued or irritable if the noise around him is too great, but he may also become hard of hearing if exposed to a clatter that is too intense for the ear to withstand, Dr. Nash said.

The physician dealing with industrial deafness is faced with conflicting forces, he added.

Dr. Nash is sometimes asked to testify for a worker that his hearing "loss" was caused by plant noise and is permanent in nature. Industry, on the other hand, while wanting to compensate employees who actually are deafened, wants the ear specialist to rule out disablements that happened years ago, Dr. Nash reported.

A third party, the insurance company, wants to distinguish between a temporary hearing loss and a permanent one, the physician added.

"In efforts to make the best of a bad situation, labor, industry, workmen's compensation boards, industrial commissions and underwriters are constantly jockeying for positions advantageous to their own points of view," he said.

But progress in reducing damaging plant noise is being made as a result of studies of the types and intensities of noise than can and do produce occupational deafness, he concluded.

HERE AND THERE IN THE COAL INDUSTRY

DR. JOHN R. STEELMAN

DR. JOHN R. STEELMAN ELECTED DIRECTOR OF GLEN ALDEN CORPORATION

Dr. John R. Steelman, industrial consultant and former aide to presidents Truman and Eisenhower, who was one of three new members elected to the Board of Directors of the Glen Alden Corporation during the firm's annual meeting in Wilkes-Barre, Pa.

• Mr. C. W. Jones, President, Omar Mining Company, Omar, West Virginia, announces that his company has recently awarded a contract for the design, fabrication and erection of a wet cleaning and thermal drying plant addition to their existing Omar Preparation Plant. This addition is to process 200 tons per hour of ¼" x 0 coal.

In addition to the new cleaning and drying facilities, raw coal bin storage is to be provided for 800 tons of ¼" x 0 coal with provision for adding 600 to 1200 tons of additional storage later. This raw coal storage will permit the operation of the fine coal plant on a three-shift basis and eliminate the use of all existing dry cleaning equipment.

The new plant addition is scheduled to be in operation about the middle of January, 1958, at which time Omar Mining Company will have one of the most complete coal preparation plants in the State of West Virginia producing 12,000 tons per day of highest quality metallurgical and industrial coals, all sizes of which are fully washed by the latest processes.

The production of the Omar Preparation Plant is exclusively sold under the well-known trade names of OMAR, OMET, and OMEGA, by A. T. Massey Coal Company, Inc., General Offices: Richmond, Virginia.

New York, N. Y.—M. F. Roberts, Columbus, O., Manager of Apparatus Sales, Mining Division, Jeffrey Manufacturing Company, has been elected vice chairman of the Mining Belt Conveyor Section of the National Electrical Manufacturers Association, it is announced by Joseph F. Miller, NEMA's Managing Director. Mr. Roberts succeeds A. R. Anderson, who recently retired after having served the Jeffrey Manufacturing Company as its General Sales Manager for a number of years.

THIRTEENTH ANNUAL MEETING
of the
OPEN PIT MINING ASSOCIATION, ELECTRICAL DIVISION
will be held at the
University of Illinois, Urbana, Ill.
June 20
In Cooperation with
THE DEPARTMENT OF MINING AND METALLURGICAL ENGINERING
and
THE DIVISION OF UNIVERSITY EXTENSION
UNIVERTISY OF ILLINOIS

Euclid tractors and scrapers

lower stripping costs for mines and quarries

Tremendous power, speed and maneuverability make the 436 h.p. Euclid TC-12 Twin-Power Crawler a top performer in heavy duty mine and quarry work. No other tractor matches it for low cost production in stripping overburden, clearing, stockpiling, building haul roads and other big tractor jobs.

Euclid scrapers have struck capacities from 7 to 24 cu. yds. with engines ranging from 143 to 518 h.p. The complete line, including both two axle and three axle models, has hydraulic lever action that eliminates down-time caused by cable breakage. Good maneuverability and fast travel speed reduce cycle time . . . help move more loads and more yards for lower cost stripping operations.

Check the many advantages of "Eucs" for your operation . . . have a Euclid dealer show you why ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS CORP., Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID

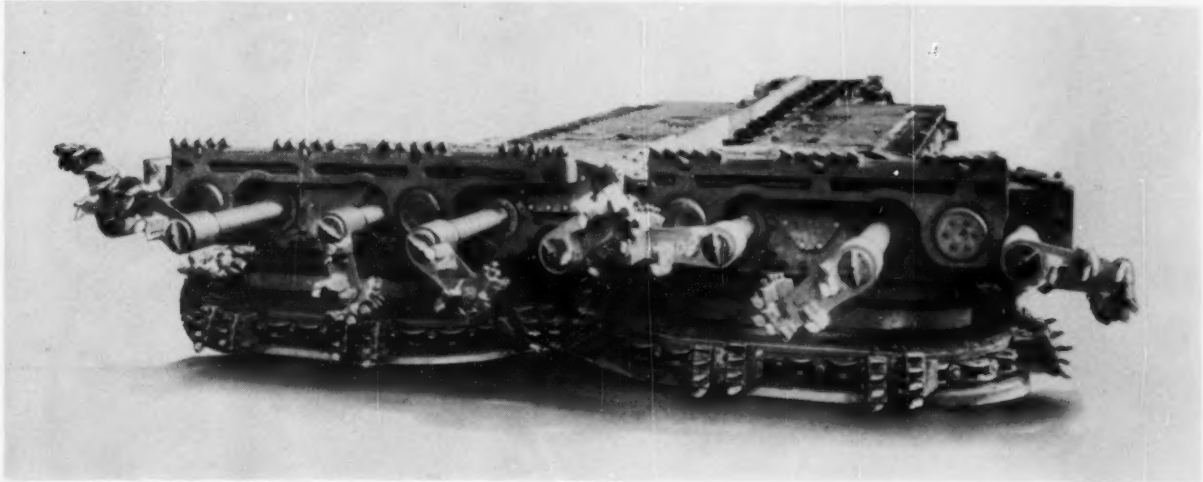
GM MORE POWER FOR YOU

COAL INDUSTRY sorely in need of MEN ★ with unusual ABILITIES

The man of genius is the most important element in efforts of the coal industry. After we have found that man of genius, we should support him with opinions of those who think, speak out, disagree when necessary, argue and ridicule, look beyond the diversion of the moment, because they try to understand.

In the past, men having unusual gifts—men of genius—very often did not measure up to accepted standards and it was their unusual characters that led them to greatness. By refusing to accept conventional restrictions—status quo of their times—they ventured where no one had tread before and created much of value to the human world. The coal industry is sorely in need of that type of individual with creative ability, the individual whose imaginations rise far above the accepted group standard and far beyond the horizons of the past. Get the unusual type to create methods of operation and our economy will furnish the required group effort to perform its complex tasks.

New 25 inches low Colmol continuous mining machine—the 86A— announced by The Jeffrey Mfg. Co., Columbus, Ohio. With this unit the coal operator will be able to realize the full advantages of continuous mining in low seams. Width of cut is 14 feet-7 inches and the cutting element will cut seams at a minimum of 28 inches. It is stated that the gathering chains on the 86A will cut the bottom 8 inches of coal giving good clean-up and smooth bottoming; no valleys. This positive gathering device carries coal into the center of the machine, up to the swinging discharge conveyor, which is an integral part of the main conveyor. All equipment is placed for easy servicing. Auxiliary equipment can include Bridge Conveyor, Extensible Belt, Shuttle Cars, Molveyor Units, etc.



The Bucyrus-Erie Model 54-B Dragline making second cut in overburden.

The Caterpillar D-9 Tractor moving overburden on coal.

RECOVERING COAL in MOUNTAIN TOPS

In Western Pennsylvania the Freeport coal seam is found in either two separate seams or, in a limited area in the vicinity of Springdale, as one double thick seam with a parting of mother coal in the middle and running about 6 feet thick. At Thomas, West Virginia the Freeport coal seam lies high in the mountains in one seam and is present only in the higher areas. There it is as much as 72 inches thick.

The Northeast Mining Company is stripping the Freeport seam near Thomas, West Virginia which runs up to 72 inches in thickness but is loading only the lower 30 inches of the coal. There the top layer of the seam varies in thickness and contains partings and impurities that make it unfit for present day commercial use. The coal rises with the topography of the area and is overlaid with a yellow shale.

Stripping is done with a Bucyrus-Erie Model 54-B dragline and a Caterpillar D-9 tractor. These two earth moving units move the overburden and bad top layer of the seam, down to the bottom layer of good coal.

Being present only in the higher spots in the area of Thomas, West Va., recovering the coal very often necessitates building and maintaining long haulroads. The Northeast Mining Company operation lies at least five miles from the hard road in its area a long private road with its maintenance, particularly after winter thaws. To maintain this long road, this operator is using a Caterpillar Model 12 Motorgrader.

Highwall shoving overburden as well as the top layer of the laminated coal seam. The bottom layer of good coal has not yet been loaded out.

The Caterpillar Model 12 Motorgrader maintaining road between pit and the tipple.

are YOU a

By EARNEST W. FAIR

Collaborationist — that's a "naughty word" today!

Naughty yes, but only in a political sense for it describes as accurately as possible, the coal firm executive who possesses qualities of business which are as necessary to success today as skill and hard work.

In every job of business today we have to collaborate (to co-labor) or to work with others. Nowhere is this more true than in the executive's job for his ultimate success as an individual as well as in his job, is entirely dependent upon his ability to work with others successfully.

Greater job progress today comes from thinking and acting together for there is no room for the lone wolf in business any more. The executive job, as every month goes by, becomes more and more complicated and more dependent upon the skills and abilities of others. We have no choice but to be a good collaborationist!

There are no set rules. The process itself is always one done informally but planned formally. Such planning is required procedure every time the solution to any business problem directly affects the responsibility of others and no where is this more true than in the executive job.

The processes of being a good collaborationist fall in three areas of maneuver for the executive. These cover (a) getting more from his assistants, (b) collaborating with associate executives in the firm, and (c) working successfully with his superiors in the organization.

The first requirement of accomplishment in working out problems with either associate executives or superiors in the organization is to master the art of getting more from our assistants in our own departments.

An extensive check of how a number of outstanding executives have accomplished this in their offices supplies several steps of procedure that should be of special interest to every reader.

"When you call your assistants together tell them why," is the advice presented from several of these men, "for it is much more difficult to handle any problem no

good COLLABORATIONIST?

matter its scope, if one must work in the dark as to the ultimate aims being sought. One of the biggest errors in working with the men and women in one's department is in failure to give them complete background on every single problem they are called together to help solve."

Several advise best results can be obtained by always giving one's assistants a chance to do a little mulling over of major problems presented to them beforehand. Every reader knows that his most successful problem solutions have seldom come on the spur of the moment.

It is also good procedure for one to point out the uncertainties connected with the project or problem in one's own mind. This opens the whole thing to more complete investigation and also gives those involved a much clearer picture of what exists in the mind of the man himself.

Stating the several sides of every problem is also advised and when differences arise during discussions it pays to give each man a chance to state his case fully. Without it most important information or reasoning may never be presented.

Much better ends are also resultant when we give our assistants an easy opportunity to talk. Where reluctance exists there is never a free expression of ideas and the very one which may solve an individual problem will never be heard.

Another wise step is to keep the level at informality as much as possible and particularly to call every individual by first name—easy informality always produces better results than stuffy dignity. Being cheerful on one's own part is of added benefit. It also is seldom advisable to make notes or keep minutes on such informal discussions unless absolutely necessary to do so for this is a sure way of keeping one's assistants from being "gun shy."

Being willing to always open any problem for reconsideration and if action is to follow making certain that each participant knows precisely what he or she has to do are two final suggestions for getting more from one's assistants.

Collaboration with one's associate executives in the firm is the second area and of extreme importance to every executive in assuring future handling of his own job on a much easier and surer level. Here are some suggestions that will help to do this:

a) Don't under estimate the importance of the other fellow. His ideas, thoughts and recommendations are usually closer to the actual problem than our own or he wouldn't be holding his executive position.

b) Don't take the easy attitude of a spectator in such general discussions. When this happens invariably the executive finds that he has a number of time consuming problems to work out with each individual later; all could have been handled at the one sitting.

c) Equip yourself with facts before the meeting. We expect authoritative evidence on any matter from our fellow executives; they have a right to expect the same thing from us.

d) Organize your own thinking first—do it before the meeting of the staff conference—your chance of winning points is always better.

e) Keep the interest of the company always ahead of the interests of your own department—that assures a great deal more co-operation from the heads of other departments.

f) Develop the ability to see the broad picture and to make others see it— that's another good way of securing maximum co-operation from other department heads.

g) Avoid scheming—don't make bargains ahead of time—don't maneuver before or during the staff meeting. This may be a good method of handling a single difficult situation BUT it is also a sure method of creating a score of strained relations on future problems every time it is done.

The third area of collaboration consists of working succesfully with one's superiors in the firm. When the executive's procedures with his assistants and associate executives have been well founded this always becomes easier. They form a sort of frame work for those conferences with the "big boss."

In addition it has been found good procedure for the executive to adopt these tactics in collaborating with the "top brass" in the firm:

a) Always be adequately prepared for the conference; it creates respect and avoids minor difficulties.

b) Think of possible questions that will be put to you and organize the answers before the conference.

c) Don't argue difficult points with such executives — explain them.

d) State your convictions on important points without hesitation.

e) If any point under discussion is not clear—ask about it.

f) Keep in mind your precise relationship in the discussion.

None of the foregoing background steps are difficult for any executive to put into effect yet their importance to his final success are so great their value is difficult to estimate.

Using them wisely makes certain that he is a good business collaborationist—and that's the kind he has to be to be a top executive today!

Large bodies of impounded water assure constant flow of streams to delude mine acid water.

There is an old saying that "fools rush in where angels fear to tread." I thought about this saying when Larry Cook asked me to talk to this gathering about the coal industry in relation to pollution problems in Ohio. This is a subject in which I am greatly interested. It is also one for which my views have been both praised and castigated. Claiming to be neither fool nor angel, I accepted the invitation to talk on this subject because I believe you are sincerely interested in knowing how some people outside of the coal industry view coal-related pollution problems.

My interest in this subject has both practical and personal foundations. Like many conservation-minded persons, I am very sensitive to the ways in which all of our natural resources are used. Prematurely cut trees, burned-over forests, polluted streams, eroded field, wantonly killed wildlife and skimmed mineral reserves command my concern much like a minister worries over the behavior of his congregation or a coach over the attitude of his team. After nearly ten years of teaching in college classrooms and more than five years of administrative experience in the Ohio Department of Natural Resources, I am convinced that t h i s concern for natural resources conservation is common among both well-informed and poorly-informed people. They want resources conserved and often demand more vigorous programs of regulated use and enlightened management than conservation agencies feel free to advocate or enforce. This feeling of concern is manifest in the many conservation agencies, some sixty or more of national character, to which they belong. It is manifest, too, in the hundreds of conservation measures introduced in state General Assemblies and before the United States Congress. It is manifest in the vigorous campaigns which have been waged over such subjects as public vs. private power development on natural streams, over grazing of public forest lands, timber harvest in national parks and monuments, and the condition of land developed for underlying mineral resources.

Although there is concern on the part of conservationists, there is also realism. As with everyone else, the abundant lives they enjoy are dependent upon use of resources. They know this is true for all resources, and especially so for certain ones of which coal is one of the most important. There is no need here to recite the importance

our WATER POLLUTION problem

DR. CHARLES A. DAMBACH

Allis-Chalmers H D-21 tractor backfilling strip mine spoil.

of coal in the economy on which our well-being is based. The warmth of this room, the light by which I read, the bus on which I rode in coming down here are symbolic of that importance. It should be noted, however, that other resources may be adversely affected by conditions brought about by the way coal is recovered for use and that these resources, too, have considerable value; and one of them, water, is vital to our very existence.

There was a time, and not so long ago, when coal mining and its impact on other resources, was of apparent minor importance. That situation has changed to one of general concern. This situation is not due so much to any changes in the mining and processing of coal as it is to the great relative increase in the importance placed on the affected resources.

A little over two decades ago our major concern with water was how best to get rid of it in times of high flow. Droughts were thought of as something affecting only farmers and particularly farmers in the West. We had no state agency exclusively concerned with this resource and bothered ourselves to collect data on ground water and stream flow at only a few locations. Now we are engaged in a tremendous program of fact finding, education and development to assure the most effective use of water. This preoccupation with water is tied to the tremendous population growth we are experiencing and the greatly increased use of water needed to provide the goods and services we demand. As our cities and factories have stretched out for building space, they have had to stretch still farther to find adequate water supplies. *This stretching out of necessity is reaching into the watersheds where coal is produced.* In some areas, notably along the Ohio River, the accelerated industrial and *urban expansion is taking place within the coal producing area.* This development places use of our waterways for effluent from coal mining operations on a more competitive basis with domestic and industrial uses.

Another development of significance is the growing importance of the hilly regions of the state to the thousands of people from our factories, offices and shops seeking out-of-door recreation. Forest clad hills, clean streams and an abundant natural flora and fauna are essential to this use. More than a million of our citizens seek this kind of recreation in the state annually. They expend yearly as much for this purpose as they do for electricity in their homes and as much as the value at the mine of all Ohio coal production in an equal period. They spend more than twice as much for goods and services related to such recreation as is paid to all wage and salary earners in our Ohio coal fields. The average Ohioan who fishes and hunts spends much more money for this purpose than he does to put

coal in his basement. There is no intent to minimize the importance of coal in these comparisons. My purpose is to demonstrate that a significant part of our population and a significant part of our economy is involved in any operation which adversely affects outdoor recreational resources. Additional comparisons might be made with respect to land resources for agricultural and forestry purposes.

We are, I believe, all aware of the fact that coal mining operations do, under certain conditions, adversely affect soil, water, forest and outdoor recreational resources. This may be manifest in the sterile spoil banks resulting from strip mining operations, the fumes from burning refuse, the unsightliness of gob piles, the dust from coal washings and the acids which drain into our water courses. So long as coal mining was on a small scale and the principal coal-producing areas were thinly populated or little frequented, these problems attracted little attention. They are now attracting attention and causing concern. Strip mining in particular has commanded public attention and action has resulted which appears to be in the public interest.

A problem of major importance yet to feel the full impact of public concern is that of acid wastes entering our streams from both active and abandoned coal mines and adversely affecting water supplies for industrial, domestic, agricultural and recreational purposes. According to a survey by the State Division of Wildlife in 1955, 231 streams in 26 Ohio counties are adversely affected by mine acid wastes. Some streams have been rendered virtually useless and 78 streams in the 15 leading coal-producing counties have been seriously damaged. Detailed studies on one of these streams, the 648-square-mile drainage area of Racoon Creek in southern Ohio, indicate that this 110-mile-long stream is now nearly devoid of fish life and unsuitable in places for agricultural or household use. Approximately 4,000 tons of sulphuric acid each year drain from the active and abandoned mines in this watershed into Racoon Creek. These acidified waters join the Ohio River which carries an estimated annual acid load from coal mines of the valley of 2,500,000 tons. These wastes also carry hardness constituents and iron which must be removed before the water is suitable for downstream use.

the removal of the polluting properties of such drainage are known. No one has, of course, found a practical method for removing these properties and some scientists have flatly predicted that such methods will never be discovered.

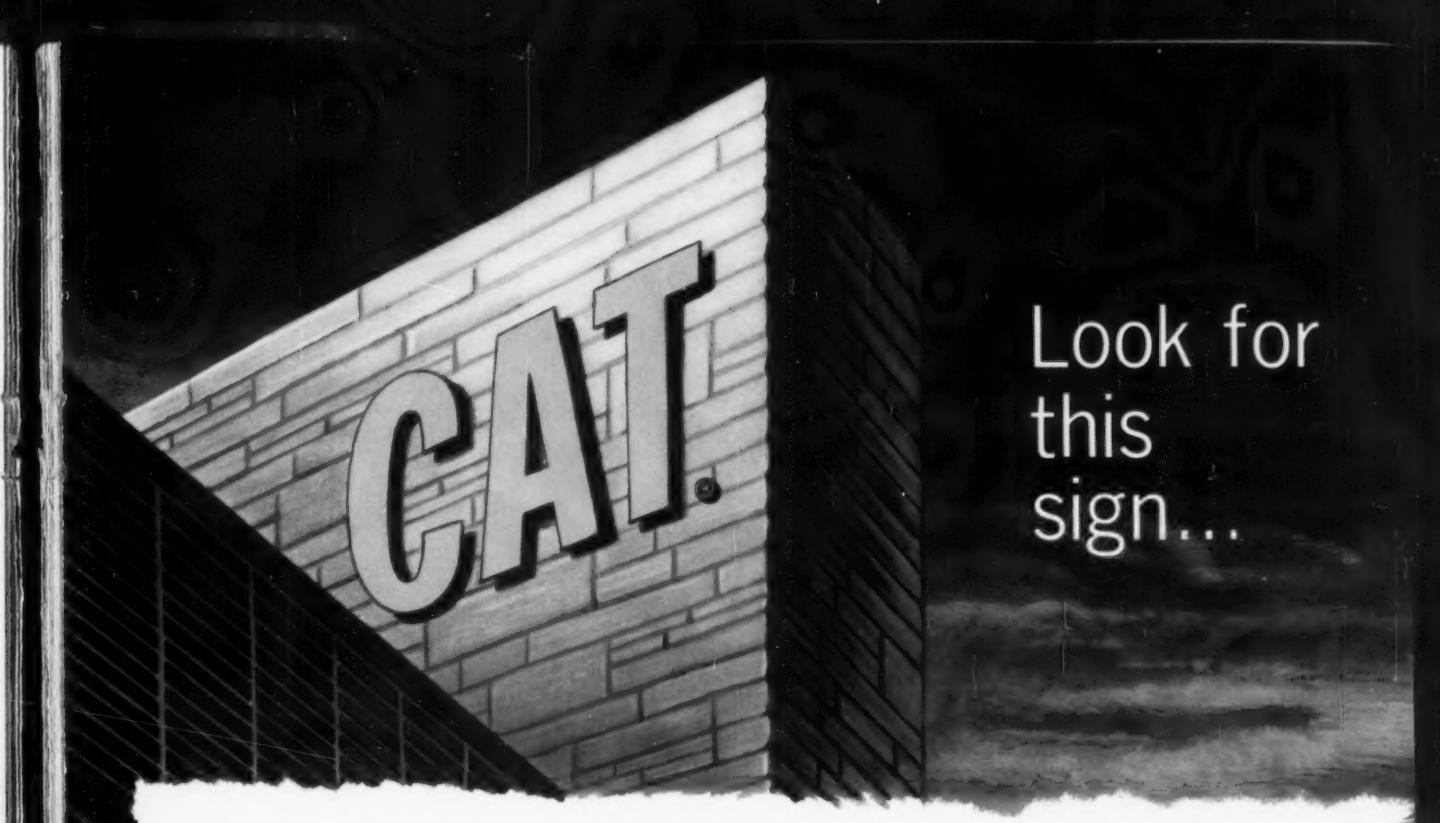
While I am not so pessimistic, I do recognize that we are a long way from any practical method of *removing sulphuric acid* from the drainage from the thousands of

Caterpillar D-8 tractor pulling scraper in strip mine reclamation.

Raccoon Creek is only an example of a situation that exists in many southeastern Ohio streams. Yellow Creek in Jefferson County, Captina Creek in Belmont County and Moxahala Creek in Perry and Muskingum counties are among the Ohio streams affected by mine acids. Obviously, this situation is not peculiar to Ohio. It occurs in most, if not all, of the states where coal mining is practiced and in other countries as well. It is a more serious problem in some states than here, and in Pennsylvania has led to the adoption and enforcement of regulations designed to protect presently clean waters from this kind of pollution. Such regulations are not, as I am sure you are aware, in force in Ohio. This is due to the language of the Ohio law which provides that the Pollution Control Act does not apply to acid mine drainage until practical means for

mine openings and gob piles which mar the Ohio countryside. I might also add that we are a long way, too, from finding any practical way of removing the plant nutrients and topsoil from the water that drains away from our farm lands. This has not, however, kept us from doing something to prevent nutrients and soil from washing away, and tremendous progress has been made in recent years to reduce such losses. The basic elements of this effort are a significant research program, a well-directed educational program and technical assistance directed to the special needs of individual farms.

If a comparable program dealing with the mine acid problem exists, I have been totally unaware of it. This is not to be taken to belittle the very fine research work undertaken by Dr. Braley and his associates at the Mellon Institute



...it's your guarantee of Service!

Wherever you see the familiar CATERPILLAR and CAT signs, you'll find the best parts and service available for your Caterpillar equipment!

It's the *one* and *only* place that offers the world's most complete line of heavy equipment built by one manufacturer, sold and serviced by one dealer organization!

It's the *one* and *only* place where you can be absolutely sure that the men who work on your Cat equipment know their business—are factory-trained and use precision factory-designed tools.

It's the *one* and *only* place with a complete stock of original Caterpillar-built parts for both new and older equipment.

These are advantages you'll enjoy when you standardize equipment, parts and service needs with us. You have the best when you own Cat equipment. We will help you keep it that way!

Here's your nearby CATERPILLAR DEALER

BECKWITH MACHINERY COMPANY
6550 HAMILTON AVENUE, PITTSBURGH, PA. • OLD TOWN ROAD, CLEARFIELD, PA. • EAST BROADWAY, FARRELL, PA.
361-369 CONGRESS ST., BRADFORD, PA. • 1356 E. 12TH ST., ERIE, PA. • BUCKHANNON PIKE, CLARKSBURG, W. VA.

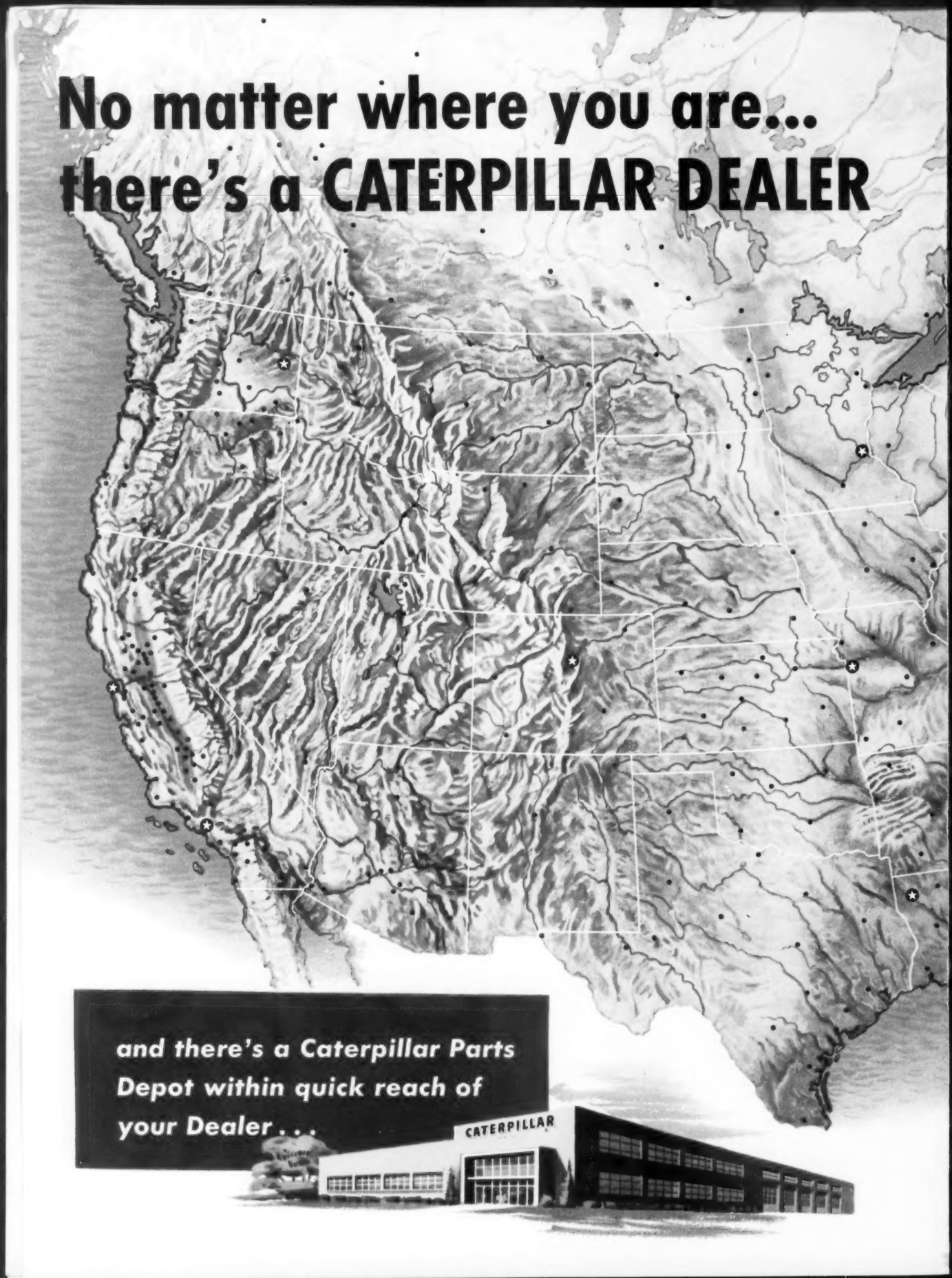
CLEVELAND BROTHERS EQUIPMENT CO., INC.
ROUTE 322, HARRISBURG, PA. • ROUTE 309, WILKES-BARRE, PA.
ROUTE 122-STATE ROAD, FRACKVILLE, PA. • P. O. BOX 431, PHILIPSBURG, PA.

OHIO MACHINERY CO.
6606 SCHAAF ROAD, CLEVELAND, OHIO • 930 KINNEAR ROAD, COLUMBUS, OHIO • 2807 REYNOLDS ROAD, TOLEDO, OHIO
U. S. ROUTE 250, CADIZ, OHIO • 4000 LAKE PARK ROAD, YOUNGSTOWN, OHIO

WALKER MACHINERY CO.
1545 HANSFORD STREET, CHARLSTON, W. VA. • 4010 EMERSON AVE., ROUTE #2, PARKERSBURG, W. VA.

CM-6

No matter where you are... there's a CATERPILLAR DEALER



and there's a Caterpillar Parts Depot within quick reach of your Dealer . . .

near by

Pin-point your job—your home town—on the map here. Often right next door—seldom more than a couple of hours away—you'll find our sales-service-parts headquarters. No matter where your job takes you, there's a Caterpillar Dealer near by!

Better service is our strong suit. We're in business to keep your equipment out of the shop and on your job working longer, costing less to maintain, keeping you profitably in business. The layout of our modern service shops is planned to expedite servicing Cat equipment. We'll help you save time and money, and assure you of a thorough job done at a reasonable price. What's more, we stock—or can get on short notice—all the parts you'll need. This is another assurance you have against makeshift service.

Near our stores is a factory-maintained parts depot—a total of 11 are spread across the country from Spokane to Miami. An average of 35,000 separate items are stocked at each depot. In addition, there are four Caterpillar Parts Departments, each stocking as many as 100,000 separate items. These facilities, backing up our own big stock of parts, assure you of fast delivery on 100% of your parts needs!

Caterpillar Service where and when you need it . . .

Our modern "shops on wheels" are ready to speed to your job on short notice. Our service trucks are well-equipped with modern labor-saving tools, and manned by experienced, factory-trained servicemen. They're prepared to handle big or small jobs and to spot trouble before it starts.

Look for this Parts Package....

...it's your guarantee of ORIGINAL CATERPILLAR PARTS!

Only original CAT* parts come in this box—that's what we stock! Before you buy replacement parts, we urge you to check our parts, quality, service and prices. Don't jeopardize your machine with bargain-priced substitutes that may seem to offer big savings. Keep your Caterpillar equipment ALL CATERPILLAR!

The man who hands you this box of parts is a factory-trained parts man who fills your order promptly, correctly and courteously. He will check your orders against up-to-date Caterpillar parts catalogs, machine history folders and other reference material. The parts he hands you have the latest improvements.

We are the *only* source you can rely upon to continue stocking and filling all your parts needs for the life of your Caterpillar equipment.

Our whole business future is at stake in your equipment's profitable performance. We're on *your* team all the way! Assure yourself the confidence—and profits—that come from using only the best. Be sure. Use Cat original parts—available when and where you need them!

We have a complete line of parts to fill your needs from stock. Our inventory control system assures you that we won't be caught short. Experienced parts men fill your order quickly and correctly.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

DPS1200

Printed in U.S.A.

ORIGINAL CATERPILLAR PARTS SOLD ONLY THROUGH YOUR CATERPILLAR DEALER

BECKWITH MACHINERY COMPANY
6550 HAMILTON AVENUE, PITTSBURGH, PA. • OLD TOWN ROAD, CLEARFIELD, PA. • EAST BROADWAY, FARRELL, PA.
361-369 CONGRESS ST., BRADFORD, PA. • 1356 E. 12TH ST., ERIE, PA. • BUCKHANNON PIKE, CLARKSBURG, W. VA.

CLEVELAND BROTHERS EQUIPMENT CO., INC.
ROUTE 322, HARRISBURG, PA. • ROUTE 309, WILKES-BARRE, PA.
ROUTE 122-STATE ROAD, FRACKVILLE, PA. • P. O. BOX 431, PHILIPSBURG, PA.

OHIO MACHINERY CO.
6606 SCHAAF ROAD, CLEVELAND, OHIO • 930 KINNEAR ROAD, COLUMBUS, OHIO • 2807 REYNOLDS ROAD, TOLEDO, OHIO
U. S. ROUTE 250, CADIZ, OHIO • 4000 LAKE PARK ROAD, YOUNGSTOWN, OHIO

WALKER MACHINERY CO.
1545 HANSFORD STREET, CHARLSTON, W. VA. • 4010 EMERSON AVE., ROUTE #2, PARKERSBURG, W. VA.

CM-6

under the auspices of the Pennsylvania Sanitary Water Board and the more recent studies at the Mellon institute and West Virginia University Engineering Experiment Station sponsored by the Bituminous Coal Research Corporation or the Johns Hopkins studies sponsored by the Potomac River Commission. These are important scientific contributions. The importance of the problem, however, is such that much more research is needed. As Edward J. Cleary, Executive Director of the Ohio River Valley Sanitary Commission stated in his 1950 report, "Mine acid pollution, which has already affected hundreds of miles of streams in the Ohio basin, would not have grown to this magnitude, or have been tolerated, if means for curbing this waste had been developed. But it must now be evident—to the mining industry as well as pollution control agencies — that the time has passed when we can afford to exploit one natural resource (coal) at the expense of another (water supply). From a long-range view it is not difficult to conceive that the water resources being destroyed are more vital than the coal resources being developed." In this same report Mr. Cleary observed that "Although the coal industry occupies a dominant role in the economic life of the nation, its record in pollution control falls far short of the efforts being expended for other industries. This great industry, with the nation's most serious unsolved stream-pollution problems, shows an expenditure of only $100,000 on waste abatement research." Undoubtedly there has been some improvement in recent years but it should be noted that the Ohio River Sanitary Commission has within recent months appealed for Congressional action to greatly accelerate research on this problem.

To the need for research, I would add the need for education both within the industry and without. As an educator concerned with teaching programs in resource conservation, I see many fine publications, exhibits, films, posters and other educational aids on natural resources. Organizations like the American Petroleum Institute, the American Forest Products Institute, the Wildlife Management Institute and the American Wildlife Federation work closely with educators in the interest of an enlightened public. From my observations, the coal industry is conspicuously deficient in this field. This is true, too, I believe, to a lesser degree within the industry. As Dr. Braley has observed, ". . . it is evident that much can be accomplished toward prevention of acid increase from new mines and new areas by the application of correct drainages principles." "Many strip mine operators have been negligent of their responsibility to the public. They have left unsightly spoil banks and unnecessarily contaminated many streams, and as a result this method of mining often is condemned by the public. While the criticism only applies to a small percent of the operators, the entire industry suffers." We are, of course, aware that much of the present acid mine waste is coming from abandoned mines. It is important that current and future operators do not add to this burden by ignoring preventive measures. Effective internal education is needed to create both the "know-how" and the desire to adopt such measures.

Strip mined land restored to farming.

If not already here, I believe, the time is near, too, when technical guidance should be provided coal operators lacking skilled technical staffs to properly design drainage systems which will prevent or reduce mine acid formation. Every little sidehill mine opened in Ohio is a potential new source of mine acid. Lacking appropriate drainage precautions, they are potential perpetual acid factories, and when they go into the "abandoned mine" classification, they become everyone's concern but no one's responsibility.

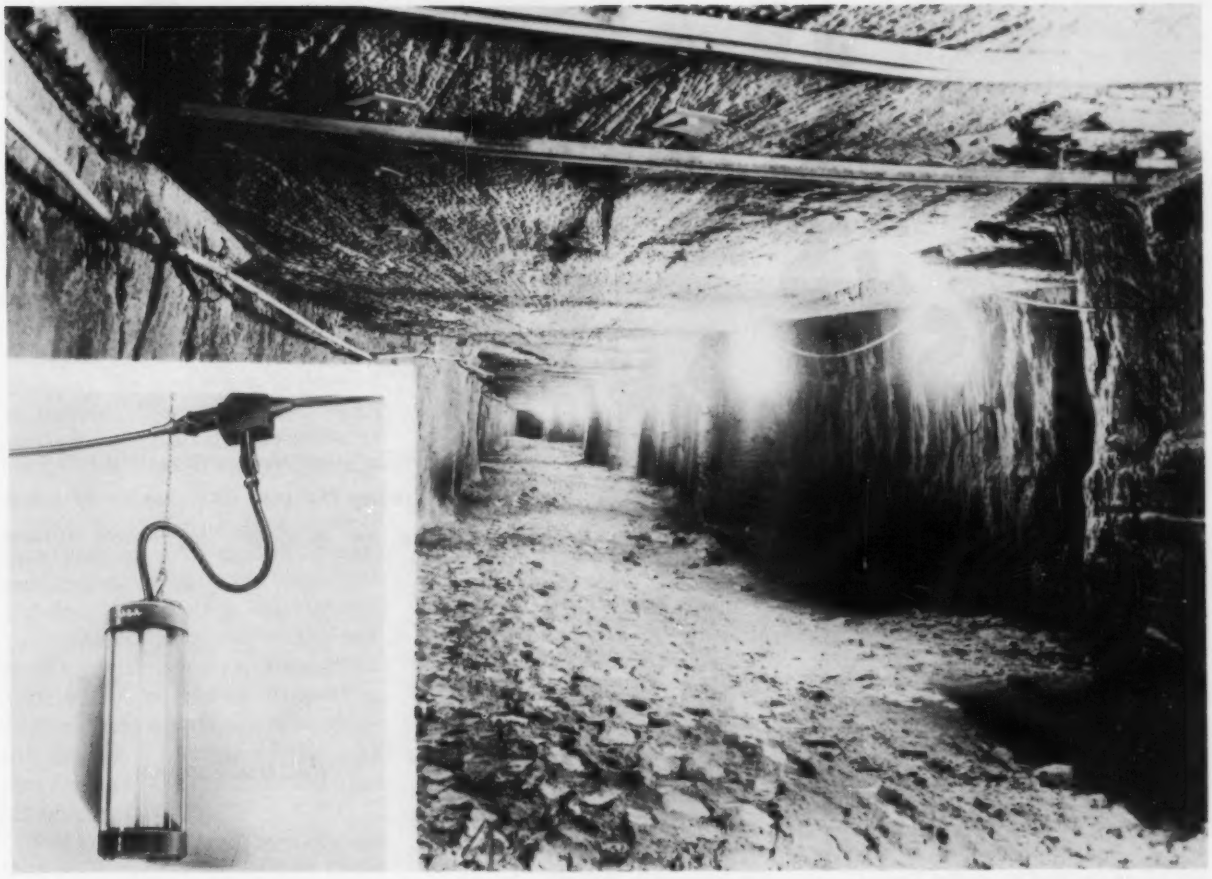
I hope I have not appeared to be overly critical of the coal industry in this discussion. I recognize that you are making an important and a necessary contribution to the well-being of our country. My purpose has been to draw your attention to how some people view this problem and to offer what I hope are taken as constructive suggestions. Others have summed up the situation better than I can. Dr. Braley did so when he said, "The problem is colossal, but continued thought and conscientious effort can and will accomplish much toward abatement of the nuisance."

DECKER CONSTRUCTION COMPANY MOVES MOST OF ITS OVERBURDEN WITH TRACTORS

★

Two miles north of Garrett, Pennsylvania, the Decker Construction Company is using Caterpillar D-9 and D-8 tractors to move overburden averaging 45 feet high. Stripped coal is loaded out with a Bucyrus-Erie Model 22-B shovel powered by a Caterpillar D-13,000 engine. Approximately 100,000 tons of coal is produced in a year.

New Mining Era Demands Greater Knowledge of Machines and Their Parts



Designed to provide supplementary illumination, Permissible Mine Lighting System fixtures like this are shown in operation many hundreds of feet under the earth's surface. These fixtures, made by Mine Safety Appliances Company, Pittsburgh, provide the first safe system for illuminating underground working areas.

We have entered an era in mining which will be ever changing.

The way to further progress in this ever changing situation lay in producing more with greater output per worker. Better production starts a chain reaction which lowers costs, increases wages, lowers prices by which everybody's purchasing power is increased. More production also increases the margin of profit for the coal producer who, in turn, buys more and better machinery with which to work, hence the process becomes self perpetuating and is the means for maintaining a steadily rising scale of living.

The future of coal mining will require more technology and a greater extension of evolution of new equipment. Much greater progress is needed and at a continuously accelerated pace.

Previously scientific investigation has been regarded by too many mining men as a foolishness in the hope of finding something rare. Now research has become a deliberate instrument in all industrial development for economic gain or for the purpose of contributing to our fund of knowledge. Increased use of scientific knowledge enabled us to span the previously formidable gap between that knowledge and its application to practical problems.

The fraction of our working force engaged in engineering and scientific pursuit is multiplying. The time is coming when an occupation in industry will rest upon a systematic understanding of industrial processes in all its complexity, rather than on the insecure basis which support it today. We will need men who possess an intimate knowledge of the structure of the new machines as well as a thorough understanding of the operation of their parts.

set up a SYSTEM for SUGGESTIONS

One valuable employee suggestion will more than repay the cost and trouble of establishing an employee suggestion system.

By JACK BEDFORD

One of the many advantages a coal mining management realizes from using some sort of a suggestion system is the free flow of valuable ideas that come from the employees who are close to the actual operating problems.

One good, sound idea that can be adopted from these suggestions will pay many times the effort and expense involved in starting a suggestion system for a coal mine.

Ideas to reduce the expense of operation may be included in the

suggestions presented by the employees. Ideas for safer working conditions, or ideas on sales promotion may be presented by the employees.

All of these thoughts on time- and money-saving ideas around the coal mine can come from everyone in the organization. When put into practice, these ideas may earn or save thousands of dollars during a year for the coal mine.

Encouraging suggestions encourages employees to think—and to think independently. Perhaps some idea presented will be an adaptation of some other successful idea. but these shouldn't be discouraged. Independent thinking is one of the best ways to develop an individual employee, and as an employee grows, the business is bound to grow in direct proportion.

Then, of course, there is another advantage of some system of suggestions. It gives all the employees a chance to let off a little steam. True, this is all some of the employees will use the suggestion system for at first. But, after awhile, these employees who gripe will become conscious of the fact that they are not contributing anything constructive.

Some management men report that their suggestion system boxes prove to be general catchalls for any complaint the employees have. In addition to these employee gripes, the box may provide a handy waste basket for all manner of trash.

When this happens, the suggestion system has not been operating properly. It hasn't been worth the effort of putting up a box to catch "suggestions." It is not only costly in the time it wastes, but it may prove to be far more costly in the employee's feelings it injures because their gripes are not considered at all.

Here are some suggestions on "suggestions" that have been given by management-minded men who have had success in the use of employee suggestion systems in their business:

ENCOURAGE IDEAS—NOT STEAM

When an employee suggestion system is first inaugurated in the plant, it is only natural that the employees will use it to let off a little steam that has been accumulating in their minds over something bothering them.

It is a good idea to let the employees get complaints off their chests once in awhile. But a suggestion system will prove of more value to the coal mine management if some other ideas are presented in addition to complaints.

GIVE THE SUGGESTION PUBLICITY

If all personnel in the organization know about the suggestion system and are kept aware of it, they will come through with some good suggestions to save time or money or increase the coal business.

Hiding the suggestion box won't get any ideas of a constructive nature. In fact, it will probably be filled with waste paper rather than ideas on how to save time or money in the mine.

★

ACT ON SUGGESTIONS PRESENTED

Action on the early suggestions given will provide a strong stimulant to bring forth ideas from all employees.

When a suggestion is presented, it is someone's brain-child. It is his pet, and unless definite action is taken on his suggestion, it will probably be the last suggestion he will ever make.

GIVE GOOD REASONS WHY NOT USED

Of course, every suggestion presented can't be used. Some are bound to be too expensive, others will be impractical, or out of line with the coal mine's policy. But, every suggestion given by an employee should at least be answered by management. If the idea presented is not usable, the employee presenting it should be given a reason why it can't be adopted at the time.

★

PAY FOR VALUABLE SUGGESTIONS

Most management-minded men agree that if a money incentive is offered for all suggestions presented, the ideas seem to flow faster. And, if the monetary award is based on money saved or business increases, the ideas seem to be more usable.

★

CONSIDER NON-FINANCIAL INCENTIVES

It may not be practical to properly evaluate all ideas presented as suggestions by employees. Some executives have adopted the policy in such cases of giving some form of reward other than cash.

★

GIVE ACCEPTED IDEAS RECOGNITION

When some employee presents an idea that is accepted and used, it will pay dividends to let everyone in the firm know who made the suggestion. It will stimulate others to make other suggestions for improvement of production or for the reduction of expenses in the coal mine.

Fig. 1—High wear rates on the bits were cut to one-third by the rigid mounting of Kennametal taper shank bits and specially designed holders for Jeffrey Colmol.

Modifications Solve Problem of Bit Wear

The problem of high wear rates of bits on full-face continuous coal mining machines used in the tough Indiana No. 5 Seam by Enoco Collieries, Vincennes, Ind., has been solved by modifications of the machine, the bit blocks and the bits.

Bit cost savings of more than 10 cents per ton of coal have resulted from these changes, as shown in Table I. Bit costs are now one-third or less than formerly with conventional bits.

Solution of the problem was reached through the cooperative efforts on Enoco Collieries, Jeffrey Mfg. Co., Cincinnati Mine Machine Co. and Kennametal Inc. Results of tests led to the development of wedge type bit holders and Kennametal Taper-shank bits. These holders and bits were placed in service on the outer position of the machine arms where service is most severe.

Tool savings are attributed largely to the greater rigidity of the bit in the holder. A firm grip is provided by the tapered shank which makes solid contact over its entire length so that it cannot chatter or wobble when digging into the coal face, as when a bit is held by set screws.

Bracket trouble and bit holder wear are less than one-tenth of that formerly experienced, according to John Stachura, General Superintendent of Enoco, because the bit cuts a more accurate clearance and thus reduces wear on bit holders.

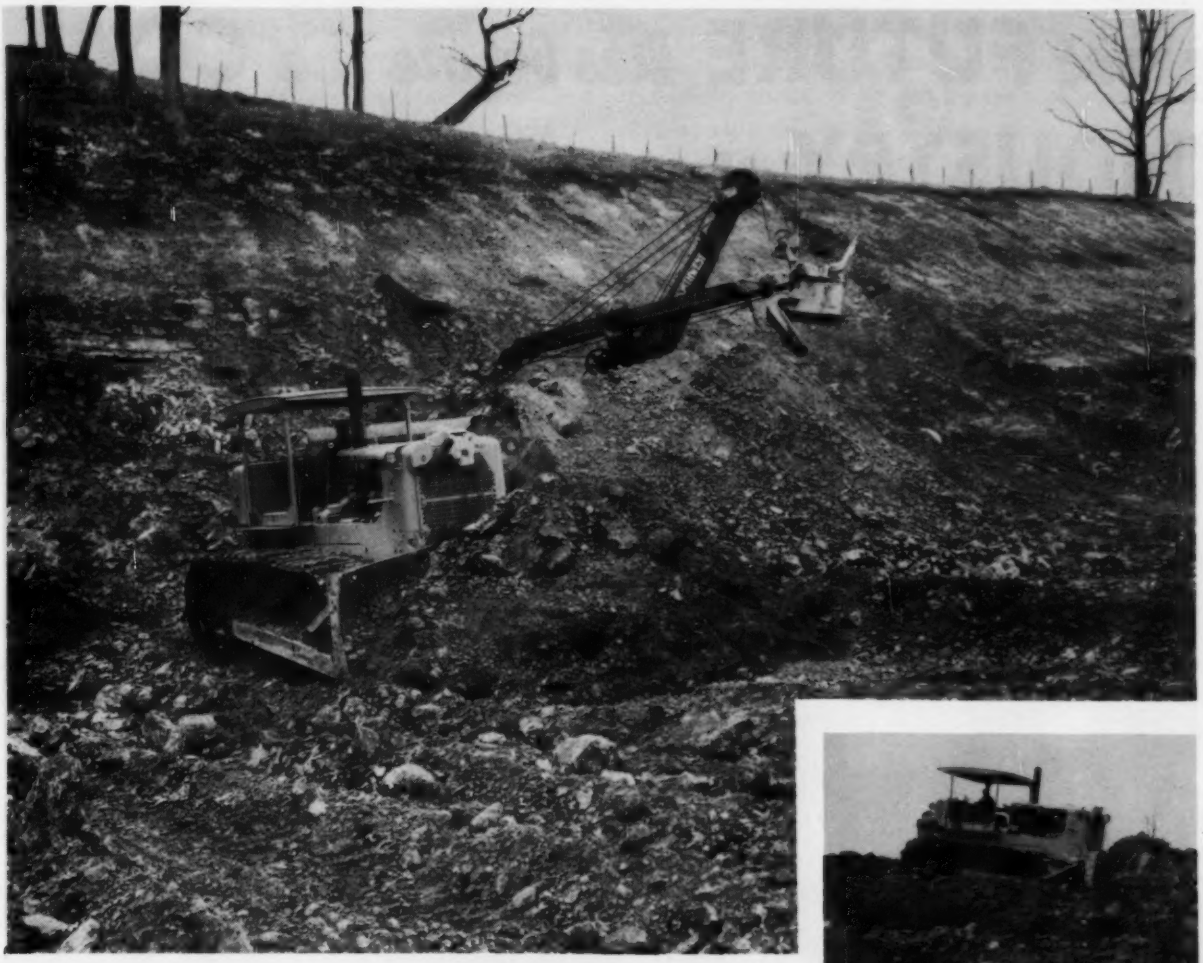
The time required for changing Kennametal U7T bits is half that required by set screw bits. So little effort is required that operators do not neglect removal of dull bits. A wedge under the end of the bit shank or the knock-out shoulder quickly removes the bit. See Fig. 3. A single tap with the hammer is enough to put another bit in place in the holder.

TABLE I
Bit Costs per Ton of Coal Mined

	Conventional Set Screw Bits	Kennametal U7T Taper Shank Bits
	1955	1956
April	12.5c	2.1c
May	17.6	5.2
June	15.9	5.5
July	26.2	5.2
August		3.9

Fig. 2—Holders for Kennametal U7T bits wear ten times longer in the outer holder position than holders for conventional set screw bits in mining the tough Indiana No. 5 Seam. This spare arm shows bit and holder design.

Fig. 3—Bit changing is fast and easy with Kennametal U7T taper shank bits. A wedge removes the bit and another bit can be put in with a tap of the hammer. Operators keep spare bits in the machine and lose little production time.



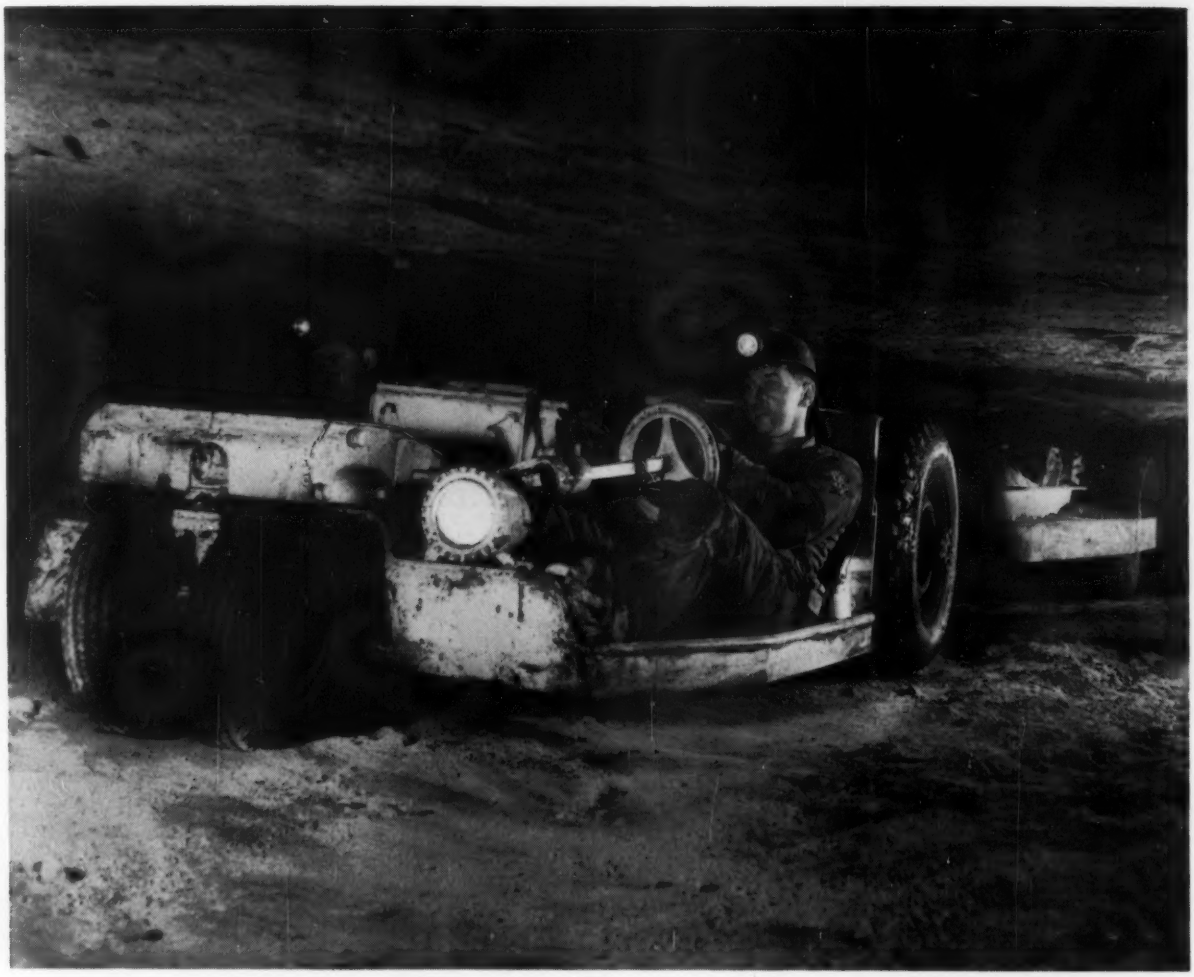
The Caterpillar D-9 Tractor pushing spoil cast by the Stripping Shovel.

The Caterpillar D-9 Tractor Stripping when it is ahead of the stripping shovel castings.

Four Brother Operation at the B & B Coal Co.

Operated by four brothers at Hackers Creek, in Northern West Virginia, the B & B Coal Company is moving most of its overburden with tractors, namely Caterpillar D-9, D-8 and D-7s. The D-9 tractor, working with a stripping shovel, not only pushes the spoil cast by the shovel but also does considerable stripping in between. The coal seam runs from 30 to 36 inches thick and up to 35 feet of overburden is moved. Approximately 6,000 tons of coal is loaded each month.

great FUTURE lies before the COAL INDUSTRY if it escapes certain perils



Long Battery Tractor for carrying men and supplies incorporates U. S. B. M. permissible electrical equipment.

As this planet on which we live revolves it improves. Our present world is the result of endless adventure into science, engineering and industry and we have learned to enjoy it. The adventures into technology and automation are daily getting more exciting and the horizons before us are unlimited.

We are at the beginning of a period in our history in which science and industry hold the promise of making unprecedented improvements in the condition of human life. Action taken now to assist the orderly growth and beneficial use of science will be of lasting significance.

Progress originates in creative thought and marks of progress are all about us today. Reviewing how far we have come and glimpsing at the great vistas before us, we see that this is an exciting time in which to live and that stirring adventures becon. Still more accomplishment is to be had which will render life more pleasant. Burdens will be lifted off man's shoulders and harassments that have always been his lot will be banished. This will be done if we can escape the possible perils and go on with the wisdom shown in recent years. Whether men in the coal industry escape the perils and continue on a path to a happier life will depend on whether they think wisely and well.

A new mobile crushing plant designed to accept direct open-pit feed and deliver crushed coal as small as ½" has been introduced by Champion Manufacturing Company. According to the manufacturer, it will make possible savings of from $.75 to $1.25 per ton in strip mining operations.

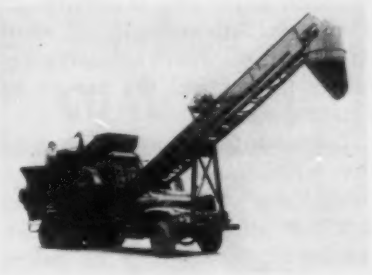
Components of the new Champion Mobile Crushing Plant are: hopper for receiving coal; variable-speed feeder, which delivers it to a picking table; a McLanahan Black Diamond Triple-Roll Crusher; and a conveyor, with swivel-type chute for delivering crushed coal to trucks. The entire unit is mounted on a modified flat bed truck. Capacity is 125 tons per hour, but it can be operated slower depending on extent of picking to be done.

Feature of the plant is the new McLanahan Black Diamond Triple-Roll Crusher, which makes reduction from open pit feed to sizes from ½" to 6" in a single pass with minimum of fines. Finished product size can be changed without stopping crusher. This unit uses an 18" diameter toothed roll to crush primary feed against a curved crushing plate. Two 18" diameter rolls perform the secondary reduction.

The Champion Mobile Crushing Plant operates on top of the coal ahead of the shovel. Coal is shovel-loaded into the hopper and finished product is delivered to trucks positioned ahead. The swivel-type chute allows rapid change to the next truck after one has been loaded.

Among the advantages of the plant are: (1) eliminates need for or charges for tipple use, (2) allows moving in and starting to move coal immediately, (3) makes possible economical removal of small blocks of coal, (4) reduces unnecessary truck travel.

Additional details on the new Champion Mobile Crushing Plant may be obtained from Champion Manufacturing Company, 1808 W. Carson Street, Pittsburgh 19, Pa.



Champion Mobile Crushing Plant with workman at picking table.

Rugged . . . Ratchet Type . . .

BIT SETTING WRENCH

The LNS Model 1195-J ¾" Coal Cutting Machine bit setting wrench enables you to set bits 6 times faster. Torque tested to 400 ft. lbs.

See this wrench at the Cleveland Coal Show — Booth No. 2506 or contact:

LEE SUPPLY CO.
138 Fallowfield, Ave.
Charleroi, Pa.

MARATHON BIT CO.
Montgomery, W. Va.

A new extra fast drying enamel for use on all types of machinery and equipment is announced by Body Bros., Incorporated, Bedford, Ohio.

Known as BoGard Rapid Dry, it is said to possess the durability of enamel and the application and drying speed of lacquer. This is achieved through use of new type resins developed specifically for incorporation in fast-drying paints.

Because it air dries in 15 to 20 minutes, Rapid Dry is particularly adaptable for use in field shops or in locations where excessive dust makes impractical the use of ordinary paints.

The manufacturer further states that when Rapid Dry is dry, it is really "dry" as there is no "back tack" or stickiness. Spray coats can be either air-dried or baked. Rapid Dry is also suitable for brush touch-up use.

Other features include good weathering and color retention qualities and the production of a very high gloss, durable, attractive finish. BoGard Rapid Dry is available in all standard commercial colors or in colors to match existing specifications. It is offered in 5-gallon cans and 55-gallon agitator drums.

For further details, write Body Bros., Incorporated, Bedford, Ohio. Ask for Bulletin RD-31.

BoGard Rapid Dry Spray-Painting of Compressor.

• A new line of surface set diamond coring bits is now available from Diamond Products, Incorporated.

Trade named DRILLCO, the new coring bits are made in all qualities of West African diamonds and are furnished in DCDMA standard sizes from EXT on up to 7¾" diameter.

Manufacturer states that these new surface set bits have been thoroughly field proven through extensive testing and are now available for immediate delivery.

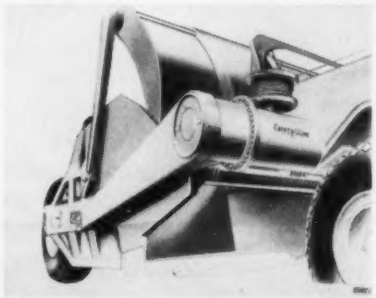
Diamonds are set in a choice of 3 types of advanced powdered metal matrices: Standard Matrix—for non-abrasive, relatively solid, good coring formation. Hard Matrix—for somewhat abrasive or fair coring formation. Super Hard Matrix—for extremely abrasive or badly broken and difficult coring formation.

For further information write directly to Diamond Products, Inc., 395 Prospect Street, Elyria, Ohio.

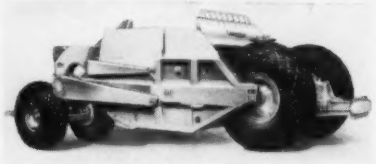
• The availability of a new large-capacity scraper, designed for use with the Caterpillar D8 and D9 Tractors, has been announced by Caterpillar Tractor Co.

Designated the Caterpillar No. 491 Scraper, the new unit offers increased pay load capacity to provide the earthmover with a high yardage scraper designed to match the power of the large track-type tractor. The No. 491 replaces the Caterpillar No. 90 Scraper in the company line, and its payload capacity of 82,000 lbs. is 12,000 pounds greater than the former model. The new scraper has a struck capacity of 27 cu. yds., and a heaped capacity of 34 cu. yds., representing an increase in yardage capacity of 26%.

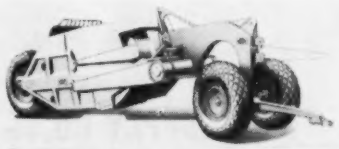
Another feature of the No. 491 is an increased apron opening, which provides 15 additional inches of opening over its predecessor model, facilitating thorough, positive ejection. This feature, combined with higher bowl sides and changes to the shape and height of the dozer-type ejector,



High Apron Lift, combined with modifications to the shape and height of the dozer-type ejector, allow the new Caterpillar No. 491 Scraper to more easily handle its larger loads. With a struck capacity of 27 cu. yds., this unit provides the earthmover with a scraper matched to the output of large track-type tractors.



The newly-introduced Caterpillar No. 491 Scraper is designed for use with the Caterpillar D8 and D9 Tractors. Having a struck capacity of 27 cu. yds., this new unit is a high production earthmover for short haul work and adverse conditions.



The Caterpillar No. 491 Scraper, designed to be used with the Caterpillar D8 and D9 Tractors, has a pay load capacity of 82,000 lbs.. an increase of 12,000 lbs. over its predecessor model. The new unit has a struck capacity of 27 cu. yds., and a heaped capacity of 34 cu. yds.

permits easy handling of the scraper's larger loads.

To combine stability with good flotation, tubeless tires are used on the Caterpillar No. 491 Scraper. The front tires have a 24:00 x 29, 24-ply rating, and the rear tires a 27:00 x 33, 24-ply rating.

The new scraper retains many proven features of the company's scraper line, including the three piece cutting edge with stinger bit center section designed to facilitate easy digging and penetration; good visibility to the cutting edge from the operator's seat; low maintenance costs; and high maneuverability.

A new special grade of its CI-88 anti-rust paint that is reputed to go on satisfactorily even over damp surfaces, is announced by Chem Industrial Co., Brooklyn 9, Ohio.

Known as "88 Special", it combines a "heavy" bituminous alkyd base with a special penetrating vehicle. The latter is reputed to cut through moisture to surface metal. "88 Special" is recommended for wet weather applications or use where it is virtually impossible to thoroughly dry a metal surface. Because of its ability to adhere to damp metal, it is particularly well adapted for use in coastal areas or in tropical climates where moisture is always present.

"88 Special" forms an attractive, shiny black elastic coating that resists dampness, mild industrial acids and fumes, grease, oil, drying effects of sun and extreme temperature changes. In addition, "88" is said to retard the corrosive effects of salt water and salt-laden air.

The manufacturer recommends "88" Special for use on virtually all exterior metalwork, including standpipes, gutters, downspouts, flashings, ventilator outlets, gratings, fire escapes, sashes, covers and housings. Among its marine applications are hulls, winches, pumps, ground tackle and dry dock equipment. It also can be used on railroad freight cars, signal tow-

"88 Special" being applied on damp gutter.

Save on Your INDUSTRIAL TRACK

FULLY GUARANTEED

FOSTER QUALITY RELAYING RAILS

Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

SEND FOR CATALOGS

RAILS - TRACK EQUIPMENT - PIPE - PILING

LB FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

Compton Model 42 Recovery Drill, complete with 200′ augers, 42" dia.
Hough Hi Lift HMD 1¾ yd. Good condition.
Lorain 820 LC Shovel, Cat. Engine, high front.
2 Manitowoc 4500 Draglines.
Manitowoc 3500 Dragline 3800 series.
P&H 1055 Dragline, 80′ boom, Buda motor.
L&S Lathe 22′ centers, 25′ bed. Good.
International Tractor 04. Like new.
Joy 10 RU Coal Cutter on Rubber, AC Power, Permissible, 440-220 V.
W-H 500 KW-MG Set, 250 V and 2300 synchronous Motor. Excellent.
GE 300 KW-MG Set, 500 V., 2300 AC.
Joy CD 25 Coal Drill on Rubber Permissibles.
30 Ton Jeffrey Locomotive, 42" ga.
Goodman 460 Loaders. Low price.
Sullivan 7 AU Cutters. Low price.
Jeffrey 29 U Cutters. Low price.
New Parts for these machines.
Joy 8 BU Loaders, 6 of these.
Sanford D-P Mine Cars, 42" ga., 5 ton.
Jeffrey 35 B and 35 BB Cutters.
Joy 3 JCM-2CE Miner in 300 series.
Coal Mine for Lease, Pgh. Seam, Metolurgicol 500 TPD, deep mine equip.

T. L. SIMPSON
MACHINERY AGENT AND BROKER
1200 Woodbourne Ave. Pittsburgh 26, Pa.
Phone LEhigh 1-2254

Teamed up for... Faster, Safer DRILLING!

SCHROEDER Hydraulic COAL DRILL

MODEL 12-B

Safe, dependable, fast drilling with complete safety . . . no spark, no kick . . . all electrical hazards removed yards from drill. Light weight Model 12-B is powered from hydraulic systems of standard mining equipment or can be furnished with Schroeder Tricycle Hydraulic Mobile Power Unit. Features minimum of operating parts and reduced maintenance costs.

SCHROEDER BH DRILL BIT

BH-1 BIT

For hydraulic hand-held coal drills, assures faster drilling with less effort as a result of . . .

1. Reduced area of penetration for ease of feed.
2. Greater clearances reduce drag.
3. Heat treated forged steel bit body.
4. Tough carbide tips hold cutting edge longer.

Send today for details and prices.

SCHROEDER BROTHERS CORPORATION
BOX 72 NICHOL AVE.
McKEES ROCKS, PA., SPAULDING 1-4810

HYDRAULIC, ELECTRIC AND PNEUMATIC EQUIPMENT

ers, bridges, trestles and switch mechanisms.

"88 Special" is available only in black in 1-gallon cans, 5-gallon pails and 55-gallon drums. It can be applied by brush, spray or roller.

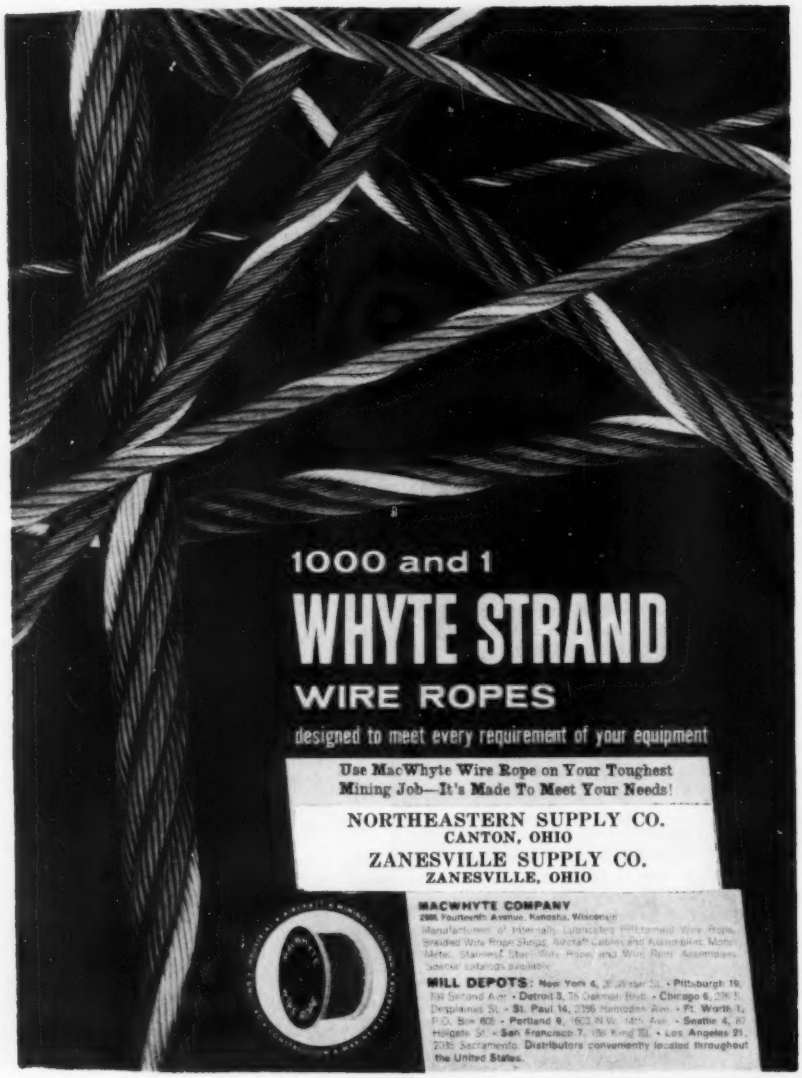
For additional data, write to Chem Industrial Co., Brooklyn 9, Ohio.

Bucyrus-Erie Company today reported that 1956 was the best year in its 76-year history. In its Annual Report, the South Milwaukee, Wisconsin, manufacturer of excavating and drilling machinery stated that shipments billed, net earnings, business booked, and dividends paid all set new records last year.

Shipments in 1956 were $86,585,951, an increase of 20.7% over 1955 shipments of $71,737,348. Net earnings for 1956 were $6,798,003, compared with $6,516,797 the previous year. At the year end, the backlog of unfilled orders for machines amounted to $28,319.000 compared with $16,721,000 at the beginning of the year.

• Operating, performance and maintenance advantages provided by Allis-Chalmers HD-16G and HD-21G tractor shovels are told through pictures and story in a new 8-page, two-color catalog (MS-1102) now available from the Allis-Chalmers Manufacturing Co., Construction Machinery Division, Milwaukee, Wis.

Also included are engineering, design and construction features of these two models, which, with aforementioned advantages, provide the big capacity, cost-cutting and versatility users want and demand in their equipment.


1000 and 1
WHYTE STRAND
WIRE ROPES
designed to meet every requirement of your equipment
Use MacWhyte Wire Rope on Your Toughest Mining Job—It's Made To Meet Your Needs!
NORTHEASTERN SUPPLY CO.
CANTON, OHIO
ZANESVILLE SUPPLY CO.
ZANESVILLE, OHIO
MACWHYTE COMPANY
2906 Fourteenth Avenue, Kenosha, Wisconsin
MILL DEPOTS:

Good Used Coal Stripping Equipment

5480 Marion Electric 15 yd. Shovel
1600 P&H Electric 6 yd. Shovel
2400 Lima 6 yd. Standard Shovel
88-B Bucyrus Erie 4 yd. Shovel and Drag
120-B Bucyrus Erie 4 yd. Shovel
111-M Marion 3 yd. H. L. Shovel
1201 Lima 2½ yd. H. L. Shovel
955 P&H 2½ yd. Standard Shovel
3500 Manitowoc 2 yd. H. L. Shovel
Unit 1020 ¾ yd. Shovel
625 Page Diesel Drag, 160′, 9 yd.
6160 Monighan Drag, 160′, 8 yd.
625 Page Diesel Drag, 150′, 10 yd.
4500 Manitowoc Drag, 140′, 4½ yd.
621-S Page Diesel Drag, 135′, 6 yd.
7200 Marion Diesel Drag, 135′, 5¾ yd.
621-S Page Diesel Drag, 125′, 7½ yd.
7-W Monighan Elec. Drag, 120′, 7 yd.
618 Page Diesel Drag, 120′, 5 yd.
5-W Bucyrus Monighan Drag, 120′, 5 yd.
2400 Lima Dragline, 110′, 6 yd.
111-M Marion Diesel Drag, 80′, 5 yd.
1055 P&H Dragline, 80′, 3½ yd.
1201 Lima Dragline, 85′, 3 yd.
955 P&H Dragline, 90′, 2½ yd.
802 Lima Cranes
604 Lima Cranes
100-B Comb. Elec. Drag and Shovel
1201 Lima Comb. Shovel and Crane
51-B Bucyrus Erie Shovel and Drag
38-B Bucyrus Erie Shovel and Backhoe
4500 Manowoc H. L. Shovel Attachment
600 Reich Heavy Truck Mounted Rotary Air Drills
COMPTON Coal Auger, 7 mos. old, 42" head, 150′ Augers—two Cummins diesel engines.
McCarthy Coal Auger Drill
Mayhew Rotary Truck Mounted Air Drills
Portadrill Truck Mounted Air Drill
Euclid Trucks—Bottom and Rear Dumps
Bay City, Lorain, P&H, Northwest and Osgood Truck Cranes
Caterpillar, International and Allis-Chalmers Bulldozers.

FRANK SWABB Equipment Co., Inc.

313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa., GLadstone 5-3658

HERE'S LOADER MOBILITY . . . EXCAVATING STRENGTH

LOADS 1½ CU YD AT A PASS . . . 2¼ yd with light materials bucket. Lifts up to 11,200 lb.

WORKS RIGHT UP ON A STOCKPILE where wheels dig in. Can build stockpiles higher, store many more yards of material in a given area.

TURNS IN ITS TRACKS . . . where many smaller loaders have to jockey.

DIGS INTO HARD-PACKED MATERIAL . . . exerts 20,000-lb break-out force, with 72 net engine hp and modern bucket design.

These are just four examples of how an Allis-Chalmers HD-6G tractor shovel offers a combination of strength, traction, flotation and mobility that enables it to replace a fleet of part-time specialized machines. You can count on it to boost production the year round. Ask your Allis-Chalmers dealer about the HD-6G . . . also the three larger tractor shovels with capacities up to 4 cu yd. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

Not ALL Mining Equipment Comes from J. T. FISH

JUST THE BEST

We Own What We Advertise

Buy from the largest stock of good mining equipment in America. Includes all types of Joy Cutters, Shuttle Cars, Cat Trucks, Belt Conveyors, Chain Conveyors, etc.

JOY EQUIPMENT—REBUILT

1—Joy 20BU Loader, latest type.
2—Joy 14BU Loaders, low pedestal, 7-AE.
2—Joy 14BU Loaders, medium pedestal, 7-RBE.
1—Joy 14BU Loader, high pedestal.
3—Joy 12BU Loaders, 9E, latest type.
3—Joy 11BU Loaders.
1—Joy 11BU Loader, latest type.
2—Joy 8BU Loaders, 250 volt DC.
1—Joy 8BU Loader, 34" overall height.
2—Joy 8BU Loaders, 220 volt AC.
2—Joy curved bar Heads, complete.
1—Goodman 660 Loader on Cats, excellent.
1—Joy 6SC Shuttle Car, rebuilt.
1—Joy 5SC Shuttle Car, rebuilt.
2—Joy 32E9 Shuttle Cars.
2—Joy 32E10 Shuttle Cars, rebuilt.
4—Joy 32E15 Shuttle Cars, rebuilt.
2—Joy 32E16 Shuttle Cars, rebuilt.
2—Joy T-2-5 Cat Trucks, rebuilt.
1—Joy T-2-6 Cat Truck with reel.
4—Joy 11B Cutting Machines, like new.
1—Joy 7B Cutting Machine, like new.
3—Goodman 512 Machines with Bugdusters.
1—Goodman Machine on Cats, 31" high. All hydraulic.
1—Goodman 512 Cutting Machine, perfect.
1—Lee Norse low vein Machine Carriers.

LOCOMOTIVES

2—Jeffrey MH-2154's, 15 tons, perfect.
4—Jeffrey, 13 ton, type MH-110, 36", 42" and 44" Ga.
3—Jeffrey, 10 ton, type MH-78, 42" and 48" Ga.
12—Jeffrey, 6 ton, type MH-88, 42", 44" and 48" Ga.
2—Jeffrey, 8 ton, type MH-100, armor plate frames.
2—Jeffrey, 6 ton, type 2186, 22" above rail, perfect.
3—Jeffrey, 4 ton, type MH-96, 42", 44" and 48" Ga.
2—G. E., 4 ton, type 825 Locomotives, 22" high.
10—G. E., 6 ton, types 801, 803, 821 Locomotives, 42", 44" and 48" Ga.
1—G. E., 8 ton, type 822 Locomotive, 44" Ga.
3—G. E., 10 ton, type 809 Locomotives, 42", 44" and 48" Ga.
1—Goodman, 4 ton, 8-30 Locomotive, 22" above rail.
1—Goodman 6 ton Locomotive, 26" high.
2—Goodman type 33, 6 ton, 44" and 48" Ga.
2—Goodman 8 ton, type 32A, 36", 44" and 48" Ga.
3—Westinghouse, type 902, 4 ton, 42" and 48" Ga.
2—Westinghouse, type 904, 6 ton, 44" and 48" Ga.
2—Westinghouse, type 905, 44" and 48" Ga.
2—Westinghouse, type 907, 10 ton, 44" and 48" Ga.

TIPPLE EQUIPMENT

1—Cedar Rapids portable super Screening Plant.
1—Allis Chalmers 5' x 14' Rippflo Vibrator.
1—4' x 10' Robbins Gyrex Vibrator.
1—McNally Pittsburgh all steel Tipple, three track, perfect.
1—Complete 4 track Tipple with washer and dryer.
Feeders, Drag Conveyors and Loading Booms.

CUTTING MACHINES

1—Jeffrey 29-UC Universal on cats.
1—Goodman 512-G-3, 220 AC.
1—Goodman on cats, 31" overall height.
1—Baby Goodman 212, rebuilt.
2—Goodman 312, 18" high.
2—Goodman 512's with Bugdusters, like new.
6—Goodman 12AA's and 112AA's.
10—Goodman 324 Slabbers.
2—Goodman 724 Slabbers.
15—Jeffrey 35L's, like new, 17" high.
3—Jeffrey 35L's, on low vein trucks.
15—Jeffrey 35B's and 35BB's.
2—Jeffrey 29B's on track.
2—Jeffrey 29C's, track mounted.
1—Jeffrey 29L, on track, perfect.
2—Sullivan CR-10's, 15" high.

LOADING MACHINES

17—Joy Loaders, all types.
2—Jeffrey 61CLR's on rubber, 26".
3—Jeffrey L-500 Loaders.
2—Myers Whaley No. 3 Automat Loaders.
2—Clarkson Loaders, 26" above rail.

CONVEYORS

2—Joy MTB-30" Conveyors, 1000'.
1—Joy MTB-30" Conveyor, 500'.
2—Joy 30" Belt Conveyors, 10 to 15 H. P. 3,000' Conveyor Belt, 30".
8—Jeffrey 61AM Room Conveyors, 300 ft.
10—Jeffrey 61HG Face Conveyors.
2—61EW Elevating Conveyors.
2—61WH, 15" Room Conveyors, 300 ft.
4—Joy Ladel UN-17 Shakers.
10—Goodman G-12½ and G-15 Shakers.
3—New Long Conveyors, 15".

CONVERTERS AND DIESEL PLANTS

1—50KW, G. E., TC-6, 275 volt Rotary Converter.
3—100KW, G. E., TCC-6's, 275 volt, Rotary Converters.
1—150KW, G. E., HCC-6, 275 volt Rotary Converter.
1—200KW, G. E., HCC-6 Rotary Converter, 275 volt DC.
3—300KW, G. E., HCC-6 Rotary Converters, 275 DC.
1—200KW, Westinghouse Rotary Converter, 275 DC.
(All the above with 6900/13000 and/or 2300/4000 primary transformers)
1—65KW MG Set, General Electric, 275 volt.
2—150KW, MG Sets, General Electric and Westinghouse.
1—200KW MG Set, Westinghouse, rebuilt.
2—300KW, G. E., MG Set, 275 volt, excellent.
1—300KW, Westinghouse, 600 volt, MG Set, rebuilt.
1—500KW, Westinghouse, 275 volt MG Set, perfect.
1—Cummins 125KW Diesel with 250 volt DC Generator.
1—700 H. P. Shaft Hoist, complete.
Complete steam plant, will sell all or any part.
Boilers, like new, 1100 H. P. and 500 H. P. Also transformers, turbines, etc.
Complete Tipples with Cleaning Plants.

MISCELLANEOUS

10—Air Compressors, 1 H. P. to 40 H. P.
40—Mine Pumps, all types.
2—Barber Green self-propelled Bucket Elevators.
Pipe, Plastic, Steel, Transit. all sizes 1" to 6".
45—Mine Cars, drop bottom, 42" Ga.
50—Mine Cars, 48" Ga. Drop Bottom, 20" above rail.
100—Mine Cars, 18" high, end dump, 44" Ga.
90—Mine Cars, end dump, 20" high, 48" Ga.
15—Brown Fayro HKL and HGD Car Spotters.
1— 12 ton —Differential Slate Larry.
5—Low Vein Water Cars.
Incline Hoists, 25 to 50 H. P.
1—Jeffrey 6 ft. Aerodyne Fan.
4—Storage Tanks, 10,000 gallon.
1—Storage Tank, 8,000 gallon.
Five Gallon G. I. Cans.
400—tons Rails, 25 lb. to 60 lb.
10—tons Copper Trolley and Feeder.
300—Transformers from 1 to 2,000 KVA, 110 to 13,000 primary volts.
400—Electric Motors, 3 to 200 H. P.
Huge stock of mine supplies.
Suspension Bridge, 300 ft. long, for river crossings.

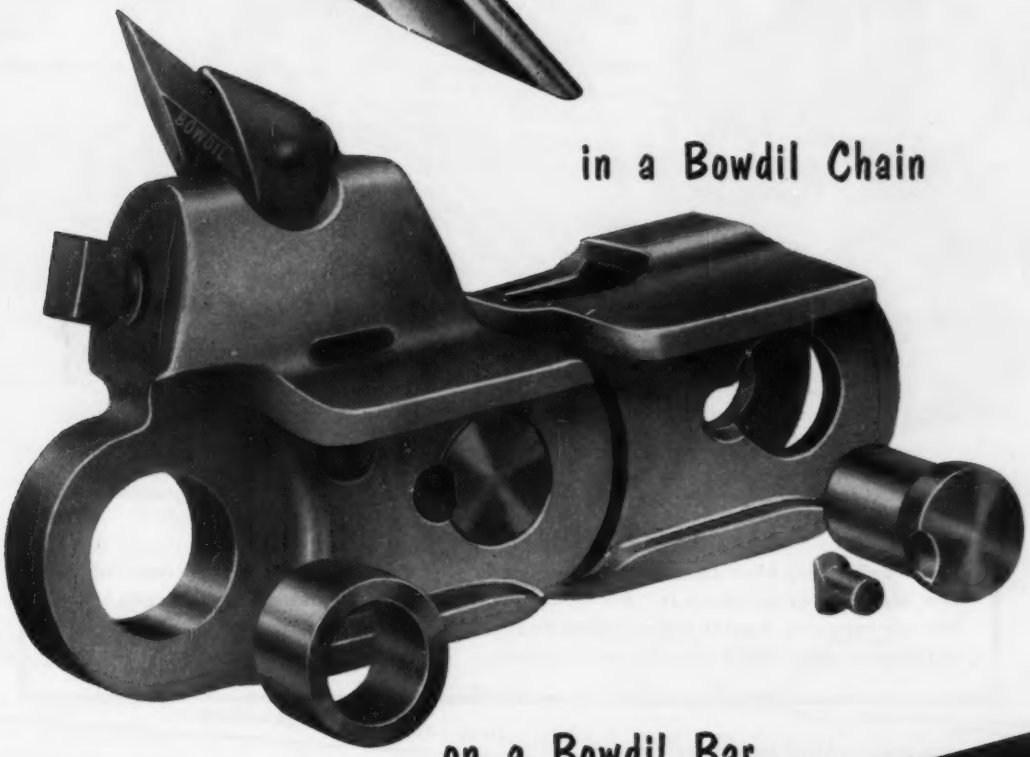
If you don't contact us before you trade — We both lose money.

Send us your Inquiries **Thousands of other Items**

J. T. FISH & COMPANY

LOGAN, WEST VA.
Phone 2825

when you put Bowdil Bits



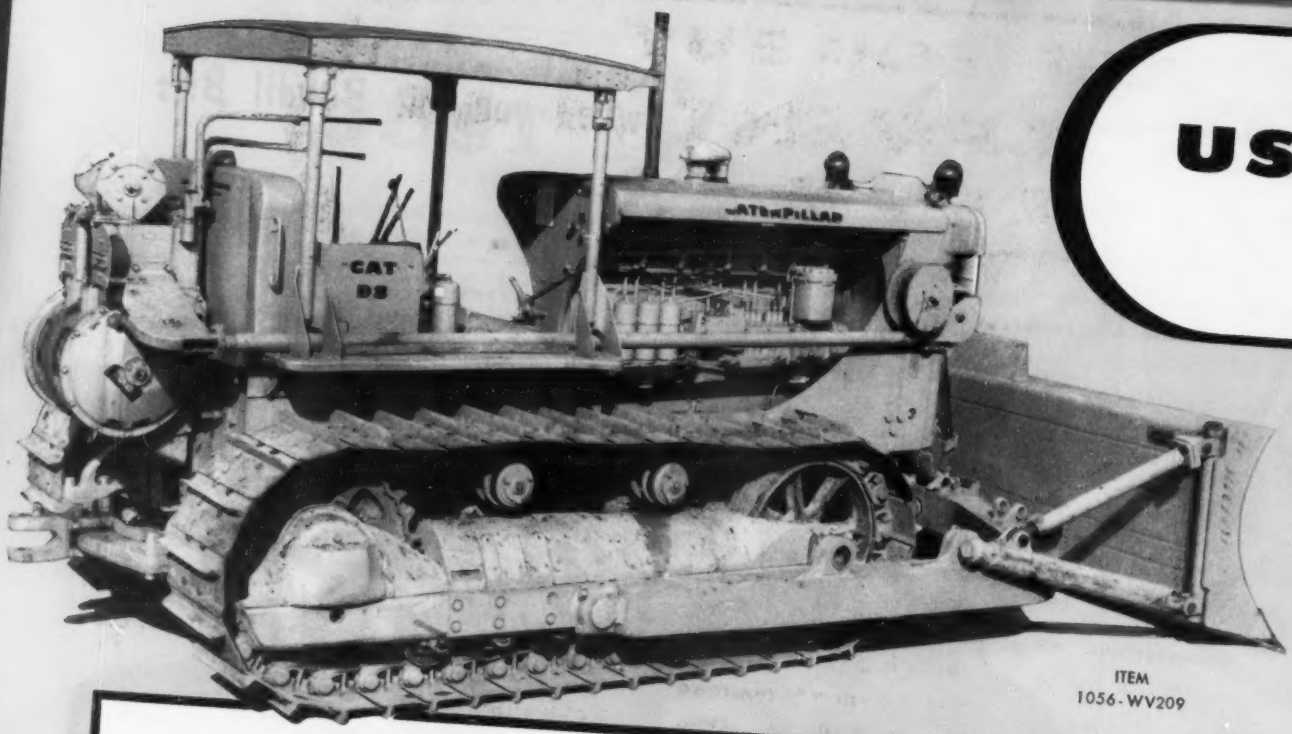
in a Bowdil Chain

on a Bowdil Bar . . .

you find your greatest economy.

The BOWDIL Company
CANTON 7, OHIO

AT THE SHOW, BOOTH 1006



ITEM
1056-WV209

USE

ALL ITEMS SUBJECT TO PRIOR SALE

Some units have been completely overhauled. Other machines have been repaired. A few are sold "as is, where is." No matter what class of equipment you buy, you know you are receiving honest dollar value. Your purchase is backed by Beckwith Machinery Company's reputation for service and honesty.

ITEM 157-P550 Caterpillar Model D8 with Control Unit and Straight Blade. Rebuilt steering clutches; relined brakes; replaced left hand bull gear, pinion, bearing races, seals and gaskets; and right hand flange, seals and gaskets in the final drive. Replaced pinion covers; replaced R. H. sprocket rim; replaced 7 rebuilt bottom rollers; adjusted valves on engine; replaced cams on master clutch; replaced top transmission shaft bearing; machine is serviced, steam cleaned and painted. "Certified Buy" **$7500.00** FOB Pittsburgh, Pa.

ITEM 1156-P536 Caterpillar D8 Tractor, 13A Series, 150 HP at the drawbar, with Cat 25 Cable Control and 8S Straight Blade. Repaired steering clutches with new pinion flanges, shafts and seals; replaced release bearings and seals; installed new outside bellows seals on final drives; replaced seal and bearing in master clutch; installed rebuilt track rollers and new carrier rollers; installed new set of tracks; rebuilt 25 cable control unit and replaced straight blade; installed new cutting edge and corner bits; serviced and tuned diesel engine and starting engine. Here's a real profit producer for you. "Bonded Buy" **$22,500.00** FOB Pittsburgh, Pa.

here are **TYPICAL**

ITEM 1256-P542 Caterpillar Model D6 wide gauge tractor with 6A Hydraulic Angle Blade. Installed new tracks and new carrier rollers; rebushed steering clutch lever and hydraulic control; adjusted hydraulic steering booster, brakes and operating clutches; replaced exhaust stack and radiator grill plates; installed rebuilt idlers. "Certified Buy" **$11,500.00** FOB Pittsburgh, Pa.

ITEM 257-P564 Caterpillar Model D9 Tractor with #29 Cable Control and 9S Blade. Only 3880 hours on machine. Installed new pins and bushings in track; installed new bellows seal on left final drive and new turbo-charger on engine. All operating clutches have been adjusted and machine is in A-1 shape. Guaranteed for 90 days against major breakdown. "Bonded Buy" **$36,000.00** FOB Pittsburgh, Pa.

LARGE HOTEL-LIVINGSTON MANOR 120 acres—accodates 350—Pool, golf, ten-

919—Other Business Opportunities

REAL ESTATE insurance store for rent, fully equipped. Ideal location

Owner retiring. Wrlte Atty. P. O. Box 452, Wareham, Mass.

CLAM BAR—RESTAURANT Bay Shore, L. I. Near water, easy terms. MUST SEE. CEntral Islip 4-9172 aft. 4

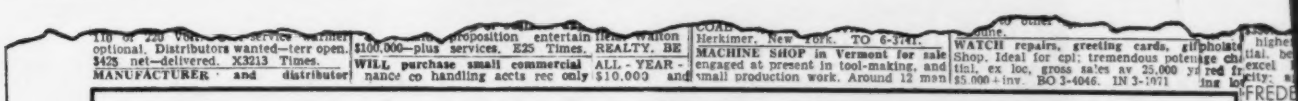
OYSTER BAY, L. I.—QUAINT REST.

WHERE YOU BUY D EQUIPMENT IS AS IMPORTANT AS WHAT YOU BUY...

SEE BECKWITH FOR HONEST VALUES

There's a common saying that goes "If you don't know your diamonds . . . know your jeweler." Of course, operating coal strippers know their earthmoving equipment very well. They are alert to engine performance, track and roller wear, condition of transmission, final drives, etc. However, sometimes it is a bit difficult for even experienced equipment owners to appraise the true value of a used piece of equipment. That's why it pays to deal with an equipment dealer like Beckwith Machinery Company. We certify that every piece of used equipment is exactly as described.

You take all the gamble out of used equipment buying and still get what you want by dealing with a reputable concern like your Caterpillar dealer. We have a variety of makes and models to choose from and we price them fairly. Each machine has been given a careful appraisal by "Caterpillar" experts and necessary shop repairs made to fit the description and price we place on it.


optional. Distributors wanted—terr open.
$425 net—delivered. X3213 Times.
MANUFACTURER and distributor
$100,000—plus services. E25 Times. REALTY. BE
WILL purchase small commercial
nance co handling accts rec only
ALL-YEAR-
$10,000 and
Herkimer. New York. TO 6-3741.
MACHINE SHOP in Vermont for sale
engaged at present in tool-making, and
small production work. Around 12 men
WATCH repairs, greeting cards, giftholate
Shop. Ideal for cpl; tremendous potenage
tial, ex loc, gross sales av 25,000
$5,000 + inv. BO 3-4046. IN 3-1971

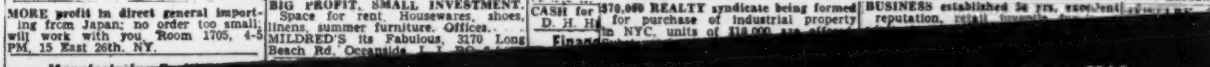
ITEM 1056-P522 Caterpillar D7 Tractor with mounted Rear Double Drum Cable Control Unit and Cat 7A Angle Blade. The 7A blade and heavy duty radiator shroud was installed new approximately 18 months ago; diesel engine and starting engine were completely rebuilt; master clutch and transmission were rebuilt; bevel gear shaft and seals were replaced and steering clutches reconditioned; new seals were installed in final drive; hydraulic steering boosters rebuilt; track roller frames were reconditioned; new recoil spring installed; new solid type idlers installed; reconditioned bottom rollers and installed new pins and bushings in tracks; serviced, steam cleaned and painted. "Bonded Buy" **$10,300.00** FOB Pittsburgh, Pa.

BECKWITH *Bargains*

ITEM 756-WV197 Caterpillar D7 Diesel Tractor with Straight Dozer and Rear D. D. Cable Control Unit. Still some good work life left in this unit. "As Is, Where Is".

$4000.00 Clarksburg, W. Va.

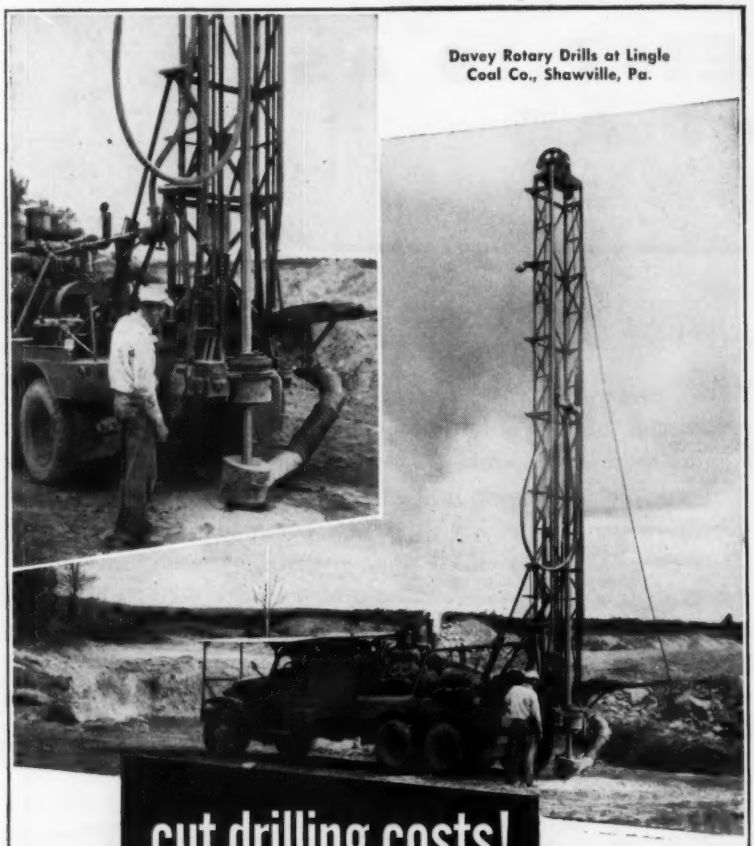
ITEM 1056-WV209 Caterpillar Model D8 Tractor with No. 25 Cable Control and No. 8A Bulldozer. Diesel engine rebuilt with new main and rod bearings, rings and new rods; oil pump rebuilt; ten new bottom rollers and two(2) rebuilt master clutch and repaired steering clutches; repaired final drives with new seals and bearings; rebuilt water pump and starting engine bendix. Excellent machine for a reasonable price. "Certified Buy" **$18,500.00** FOB Clarksburg, W. Va.


MORE profit in direct general importing from Japan; no order too small; will work with you. Room 1705, 4-5 PM, 15 East 26th. NY.
BIG PROFIT, SMALL INVESTMENT.
Space for rent. Housewares, shoes, linens, summer furniture. Offices.
MILDRED'S its Fabulous, 3170 Long Beach Rd, Oceanside
CASH for
D. H. Hi
for purchase of industrial property
in NYC. units of
$10,000
$70,000 REALTY syndicate being formed
BUSINESS established 50 yrs. excellent
reputation, retail

BECKWITH MACHINERY CO.

BRADFORD, PA. • 361-369 Congress St. • Phone 3166
CLEARFIELD, PA. • Old Town Rd. • Phone 5-9635
ERIE, PA. • 1356 E. 12th St. • Phone 4-2494
FARRELL, PA. • E. Broadway • Phone Di. 6-3572
CLARKSBURG, W.VA. • U.S. Rt. 20 • Phone Main 4-5476

6550 Hamilton Avenue • PITTSBURGH • Phone: MOntrose 1-6900



Davey Rotary Drills at Lingle Coal Co., Shawville, Pa.

cut drilling costs!

DAVEY

ROTARY DRILLS

For faster, more economical drilling . . . increased coal production at lower costs, leading strip operators rely on Davey. Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are ideal for low cost core drilling with air . . . easy to set in drilling position.

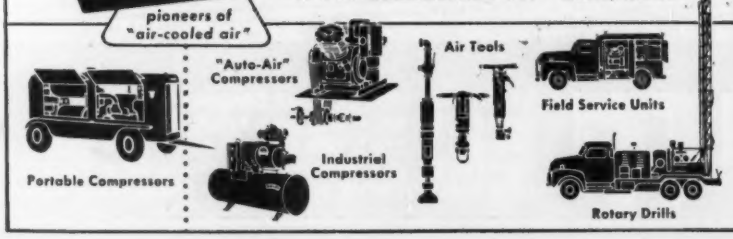
Daveys are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Outstanding features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast . . . AA-1697

Write for full details!

DAVEY

pioneers of "air-cooled air"

DAVEY COMPRESSOR CO. • KENT, OHIO



Advertiser's Index

COAL MINING

MAY, 1957

Allis-Chalmers ..... 2nd Cover, 35
Austin Powder Co. ..... 4th Cover
Beckwith Machinery 18-23, 38, 39
Bowdil Company 37
Cleveland Bros. Equipment Co. 18-23
Conte Equipment 5
Davey Compressor Co 40
Euclid Equipment 10
J. T. Fish 36
L. B. Foster Co. 33
Highway Equipment Co. ..... 1, 3 Cover; 6, 7, 40
Lee Supply Co. 31
Licking View Tool & Machine Co. 5
Link Belt Speeder 3
Harold C. Lusk Co. 5
Manitowoc Engineering Corp. 8
Marathon Bit Company 31
National Casting Co. 4
Northeastern Supply Co. 34
Ohio Machinery Co. 2, 18-23
Salem Tool 1, 5
Schroeder Bros. 33
T. L. Simpson 33
Frank Swabb Equipment Co. 34
Walker Machinery Co. 18-23

Working advantages provided by the Allis-Chalmers Model FORTY FIVE Motor Grader are covered in a new 16-page two-color catalog (MS-1148) now available from Allis-Chalmers Manufacturing Co. Construction Machinery Division, Milwaukee, Wis.

Photographs, sketches and other instructive illustrations aid readers to visualize details of the motor scraper's mechanical features and components. On-the-job photographs further assist in telling the performance, operating, comfort and service simplicity of the FORTY FIVE. The catalog also tells about attachments and accessories that add to the versatility of the unit, and includes its specifications.

Caterpillar D8—S/N 2U 11612, with hydraulic angle blade and canopy type cab. Track 65% good, reconditioned.

Caterpillar D8—S/N 2U 9703, with cable-controlled angle blades and D.D.P.C.U. Reconditioned.

Caterpillar D7—S/N 7M 9839, with cable Bulldozer blade; operating condition.

Caterpillar D4—S/N 7U 26406, with Traxcavator HT4 hydraulic hilift.

Caterpillar D4—S/N 7U 15940, with hydraulic angle blade; good condition.

International TD9—43033, with hydraulic hilift attachment.

Lorain 40—S/N 1798, ¾-cu. yd. shovel. Operating condition.

P & H 255—S/N 13267, ¾-cu. yd, shovel powered by P & H diesel.

Insley K12—S/N 3115, ½-yd. shovel and backhoe combination. Has been completely rebushed in upper works.

Highway Equipment Company

6465 Hamilton Avenue

Pittsburgh 6, Pa.

EMerson 1-3600

Allis-Chalmers HD-21s guarantee that work will start on time...end on time at Robert Bailey operation, Philipsburg.

. . . and Lima 2400s are the last word in dependability!

...see your

Highway

representative for every type of equipment you need to mine more profitably!

Michigan 175A, with scarifier, is handy "all around" machine.

175A carries heaping loads

Highway

HIGHWAY EQUIPMENT COMPANY

6465 Hamilton Ave. • Pittsburgh 6, Pa.

Allis-Chalmers • Lima Shovels, Cranes, Draglines • Master General Motors Diesel Engines • Power-Pack Conveyors Gar Wood • Lima Roadpackers • Burmeister Mixers and Bins Michigan Tractor Shovels and Excavator-Cranes Thor • Jaeger

Sam Pulaski

(1833-)

Sam Pulaski is a wise old gent,
smart as any the Lord ever sent.
His job is the same day after day—
blasting down mountains the same old way.

But there's a story to this old guy
on why he'll use Austin 'til he die.
It started back before you and me,
as far back as eighteen thirty-three.

That was the year when Sam was the one
chosen to see the canal was done.
Canal was complete 'cept for a hill
bigger'n McKinley and steeper still.

Though Sam took the job he felt quite sad,
knew he needed more strength'n twenty had.
But Sam had heart and this was his tune,
"Get me some help and get it here soon."

As fate would be, Austin caught the cry
and filled his wagon near to the sky
with explosives aplenty, fuse galore
to trample trouble that lay before.

First went the mountain almost as fast
as Austin took to make up the blast.
Then boulders were made stones and stones sand
when Sam and Austin went through the land.

The canal was done in less'n a day
and still flows freely or so some say.
But this to Sam and his roughneck friend
was just the beginning, not the end.

To blast, to prime, to clip or to drill,
for every need Pulaski must fill
he's called on Austin since thirty-three,
quite a record I think you'll agree.

* * *

Now if you quarry or work a mine,
you must use products in our line.
So why not follow Sam's tested lead—
buy from Austin . . . everything you need.

USED IN 1833 AUSTIN & EVER SINCE

AUSTIN POWDER COMPANY

CLEVELAND 13, OHIO